

Remittances and Labour Supply: A Case Study of Pakistan

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Abstract

Remittances are playing an increasingly important role in the economies of developing countries. This paper studies the effects of these flows on Pakistan's labour market. The 2007-08 Household Integrated Economic Survey and Probit as well as Propensity Score Matching techniques are employed to examine the impact of remittances on labour participation, quantity of work, nature of work and activities as well as on the non-active members of remittance-receiving households.

It is found that both foreign and domestic remittances tend to lower labour supply of the recipient households. This impact is higher among the women and youth in the rural areas relative to men, possibly due to the home production activities of women such as child care etc., and the increased likelihood of the young household members to pursue school education.

The paper also examines the quantity of labour supplied by the remittance recipient households. Results show little difference in the number of months and days worked between the households receiving and not receiving remittances. Furthermore, the likelihood of being self-employed and being own-cultivator is higher among remittance recipients.

Key Words: Remittances, labour supply, labour participation, Pakistan.

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1. Introduction

Migration is an important part of the globalization process. Advances in communication, information and transportation technologies have made migration faster within and between countries as well as regions. One aspect in which this phase of globalization differs from the previous one in the 19th century is in its economic consequences for the sending countries. Remittances, the money sent home by the migrants, have not only grown in importance everywhere, but have even become the lifeline for some countries (World Bank, 2011). Even for a large and populous developing country such as Pakistan, the amount of transfers from migrants abroad constitute more than all the private capital taken together (Anwar & Mughal, 2011). The remittances that flow to Pakistan are considered relatively stable (Mughal & Makhlouf, 2011a) and have helped alleviate poverty and decreased inter-household economic disparity (Mughal & Anwar, 2011). Remittances however are shown to have affected the country's export competitiveness through Dutch disease, a higher real exchange rate and deteriorating balance of trade (Mughal & Makhlouf, 2011b). Remittances can also impact a country's competitiveness through the channel of labour market.

This channel has been sparsely studied in the case of Pakistan, despite the fact that the country is one of the largest migrant-sending and remittance-receiving countries in the world (World Bank, 2011). In an earlier study on the urban areas, Kozelt and Alderman (1990) found a negative impact of remittances on male labour participation in Pakistan. The nature of migration and remittance flows to Pakistan has greatly evolved in the last two decades.

Pakistani migrant community is significantly diversified, with North America and Europe emerging as two other important destinations besides the established Pakistan - Persian Gulf corridor. Furthermore, the importance of skilled migration has grown (Kock & Sun, 2011). This makes it important to analyse the labour market effects of remittances. This study is

an attempt in this regard. In this paper, the impact of foreign as well as more numerous internal remittances on the participation and supply of labour is studied using a recent representative household economic survey. The analysis mainly focuses on four questions:

1. Is the labour participation behaviour of remittance-receiving households different from their non-receiving counterparts?
2. If so, what activities do the non-labour participant remittance-recipients pursue?
3. Do workers modify the quantity of labour supply with the receipt of transfers?
4. Does the receipt of remittances modify the likelihood of participation in a particular type of work activity?

The association of remittances with the probability of being self-employed, paid employee and own cultivator is examined and it is expected that a positive association exist between remittances (foreign and internal) with non-agricultural self-employment and self-cultivation respectively. The labour market effect of remittances from migrants abroad is not bound to be identical to the one of internal remittances. The main contribution of this work is that the same four questions are investigated for both kinds of transfers, and the results of the two are comparatively analyzed.

The rest of the paper is organized as follows: The next section describes some salient features of remittance-receiving households and their interaction with the labour market. A brief review of theoretical and empirical literature follows in section 3. Section 4 explains the empirical strategy and introduces the data set used. Key findings on the four questions studied are presented and discussed in section 5. Finally, section 6 concludes the

paper.

2. Remittances and Labour Supply: Some Stylized Facts

Migration is a widespread phenomenon in Pakistan. More than one in four households in the rural areas report at least one migrant (Mansuri, 2007) and almost two-thirds of those migrants send remittances to their households. According to the more representative household integrated economic survey 2007-08 used for this analysis, about 4.3 percent of Pakistani households report receiving transfers from abroad, while 8.3 percent receive internal remittances. More rural households receive foreign and domestic remittances (5.3 percent and 10.1 percent) than do the urban households (3.6 percent and 6.7 percent). Fewer persons aged 15 or more from foreign remittance-receiving households report having worked during the month prior to the survey (24 percent) than do those from non-receiving ones (47 percent). The corresponding figures for internal remittance recipients are 30 percent and 46 percent respectively (table 1). Labour participation rates among females from foreign remittance recipient households are substantially below the overall female average of 4 percent compared to 16 percent. The participation rate of women from internal remittance-receiving households, is, however, little different from the average (13.7 percent). Rural areas have generally higher labour participation rates than urban areas.

Over half the respondents (54 percent) report working as paid employees, other major job categories being unpaid family work, non-agricultural self-employment and self-cultivation. The prevalence of own-account work is higher among individuals from foreign remittance-receiving households than the internal remittance receiving ones. On the whole, about three quarter of Pakistan's work is in the informal sector, and almost half of the work force (45 percent) is employed in agriculture or allied sectors (Labour Force Survey, 2010-11). Besides, 6 percent of working age population is unemployed, the unemployment phenomenon

being mainly concentrated in the urban areas (Labour Force Survey, 2010-11).

3. Theoretical and Empirical Underpinnings

In the neoclassical theory of labour supply, individuals provide labour for market and non-market activities according to the incentives and budget constraints they face. This budget constraint is determined, in part, by the non-labour income available to the individual. The income earned by other members of the household act as a source of non-labour income for an individual. Given the assumption that leisure is a normal good, an increase in non-labour income decreases the opportunity cost of leisure and raises the reservation wage of the potential worker (Killingsworth, 1983). If the reservation wage of the individual is higher than the prevailing market wage, the individual will choose to withdraw from the labour market (Disincentive effect).

Table 1
Characteristics of Remittance-Receiving Households

(%)	Foreign Remittances	Internal Remittances
Worker of age 15 or above	24	30.821
Worker Between The Age Of 15 And 25	21.111	20
Worker Between The Age Of 26 And 50	28.125	45.323
Worker Between The Age Of 51 And 65	30	32.876
Male Worker	51.190	56.097
Female Worker	4.347	13.779
Worker Age 15 Or Above In Urban Area	23.287	30.128
Worker Age 15 Or Above Working In Rural Area	24.209	30.303
Job status – Self-Employed (Non-Agricultural)	22	14.960
Job status- Paid Employee	46	53.543
Job status- Own-cultivator	8	7.04
Highest education level – No schooling	0	1.18
Highest education level – Primary	32.61	28.24
Highest education level – Middle	16.30	20
Highest education level – Secondary	40.22	37.65
Highest education level – University	10.87	12.94

A large body of literature has investigated the effects of non-labour income. For instance, Imbens et al. (2001) in case of lottery wins and Bertrand et al. (2003) in case of pension payments find evidence of disincentive effect of non-labour income, whereas Joulfaian and Wilhelm (1994) find no negative effect of inheritance on labour participation. Remittances are also a form of non-labour income for the remaining migrant household members. Remittances raise the household's reservation wages and therefore make the labour participation of the household members less likely. The members prefer to consume more leisure (Rodriguez & Tiongson, 2001) or allocate more time to household production. The latter effect, called labour substitution, implies an increased production and consumption of non-market goods such as childcare. The departure of the migrant raises the marginal productivity of household work of the remaining household members (Cahuc & Zylberberg, 2004). Receipt of transfers reduce the shadow value of the market wage of the household members that are staying behind, and allows them to allocate more time for household activities (Acosta, 2011). This leads to a higher intra-household specialization where the migrant takes up the responsibility of providing for the household's financial needs and the remaining members (especially the women) specializing in homemaking (Hanson, 2007a). The disincentive effect should be greater among the women members of the developing country migrant households due to generally high number of dependents at home.

Remittances, through their disincentive effects, can cause moral hazard problems (Chami et al., 2005), making the households lazy (Azam & Gubert, 2006) and dependent on money transfers from abroad (Kapur, 2005). This notwithstanding, the effects of migration and remittances on the domestic labour market are by no means invariably negative. Remittances alleviate the household members' budget and credit constraints, and make it possible to invest in more profitable or risky ventures. This can increase the household's labour supply and can also cause a change in activity and job status of the worker.

Better financial conditions also allow the households to invest in its

human capital and keep the young members out of the labour market (McKenzie & Rapoport, 2011; Stark et al., 1997). Besides, the incentives for higher education attainment are stronger among remittance-receiving households due to the household's better access to foreign labour markets, where returns to university education are higher.

Given the ambiguous and contradictory nature of effects of remittances on the labour market, the question is ultimately an empirical one. In an early study of the question, Funkhouser (1992) found negative relationship between foreign remittances to Nicaragua and labour participation of the receiving households. The labour participation drops by 2.1 percent for males and 5 percent for females for every hundred dollars transferred from abroad. Similarly Gorlich et al. (2007), Gubert (2002), Jadotte (2009), and Justino and Shemyakina (2010) bring evidence of negative participation effects of remittances from Moldova, Mali, Haiti and post-conflict Tajikistan respectively. Some studies, however, find no significant impact of remittances on labour supply (Funkhouser, 2006; Yang 2008). Damon (2009) using a panel survey even finds an increase in labour supply in rural El Salvador.

Amuedo-Dorantes and Pozo (2006a) find that remittances to Mexico reduce formal sector employment among both males and females, whereas informal sector labour participation rises among the males. Other studies which find negative labour participation effects for women include Acosta (2011), Cabejin (2006), Lokshin and Glinskaya (2009), Hanson (2007b), and Mendola and Carletto (2009). On the other hand, Justino and Shemyakina (2010) find an intriguing result that the negative effect of remittances on labour supply is smaller for women than for men, a finding they explain in the context of Tajikistan's social conflict.

Another interesting question is what the migrant households do when they decrease their labour supply. Gorlich et al. (2007) find that migrant households are more likely to be involved in home production

activities and university education, whereas Rodriguez and Tiangson (2001) consider leisure to be the important activity for migrant households. Several studies such as Calero et al. (2009) on Ecuador, Hanson and Woodruff (2003) on Mexico, Cox Edwards and Ureta (2003) on El Salvador and Mansuri (2006) on Pakistan show positive impact of remittances and migration on child education. In contrast, Acosta (2011) find no difference between the levels of investment in human capital of remittance receiving and non-recipient households, while McKenzie and Rapoport (2011) and McKenzie (2005) indicate that migration might even discourage investment in education.

Foreign remittances are also found to generate and promote self-employment among recipient households (Funkhouser, 1992; Woodruff and Zenteno, 2007). Brown and Leeves (2007) observe an increase in self-employment and farming, and a drop in wage employment and subsistence agriculture in Fiji and Tonga as a result of remittances. Amuedo-Dorantes and Pozo (2006b), in their study of remittance effects on the Dominican Republic's economy, find a drop in entrepreneurial activities among recipient households.

4. Empirical Methodology

The analysis proceeds as follows: First the likelihood of participation in the labour market of individuals from remittance receiving households is examined. This impact is also estimated separately for working men and women, and households living in rural and urban areas. Besides, the impact on labour participation of the three age categories: young (15 – 25 years), middle age (26 – 50 years) and senior (51 – 65 years) respectively. In the second step, the study analyzes the non-labour activities of recipient households and examines their likelihood of looking for a job and also his/her educational attainment. The probability of both activities is studied as a whole as well as for different age groups and genders. The third and fourth parts investigate the labour impact of remittances on the individuals participating in the labour market. In part three, the relationship of remittances with the number of months and days

worked is studied, while part four compares the likelihood of members of recipient households being self-employed in agricultural and non-agricultural sectors or work as wage earners.

4.1 Data and Econometric Strategy

The data for this study is taken from the Household Integrated Economic Survey 2007-08 (HIES) conducted by the government of Pakistan. This is a representative survey comprising observations for 15512 households. The dataset contains several variables pertaining to the incidence and quantity of labour supplied by the households. Definitions and summary statistics of these and other variables used in our analysis are given in table 2. Various individual, household and location indicators are added to control for the socioeconomic situation of the individuals. The baseline model studies the likelihood of a person working, where work refers to the dichotomous variable taking the value of 1 if the person of age 15 or above has worked for profit for at least one hour during the month prior to the survey. Age (in complete years) and gender of a person are taken to control for individual features of the members of a household. Among the household variables are the number of dependents in a household (persons below 18 and over 65 years of age), the number of male adults and a binary variable for a female headship. Besides, the “highest class passed” variable reflects the education level of the household. It is a categorical variable taking the value of zero for no education, one for primary school education (grade 1 to 5), two for middle school level (grade 6 to 8), three for high school education (grade 9 to 12) and four for university education. The monetary value of the household’s savings (in natural log) is taken as a proxy for the household wealth. Finally, two geographical variables are included, one standing for the household’s residence in rural or urban area, while the other reflecting its residence in one of the country’s four provinces (Punjab, Khyber Pakhtunkhwa, Sindh and Balochistan).

The authors rely on Probit and Propensity Score Matching (PSM) techniques for most of the estimations. Probit approach provides a simple

Table 2
Summary Statistics of the Dataset

Variables	Description	Observation	%
Forrem	Remittances received in cash from abroad	8136	4.310%
Intrem	Remittances received in cash from inside Pakistan	9118	8.380%
W 15	Did the person of 15 years or above work for at least one hour for profit during the last month?	63936	45.200%
Status 3	Self-employed (non-agricultural)	30092	11.000%
Status 4	Paid employee	30092	54.300%
Status 6	Own cultivator	30092	7.410%
Malework	Working man (15 years or above)	31872	74.000%
Femwork	Working woman (15 years or above)	31957	16.700%
Wurban	Urban working person (age 15 or above)	26507	41.200%
Wrural	Rural working person (age 15 or above)	37429	48.100%
Work1525	Age group: workers below 25 years	24537	37.200%
Work2650	Age group: 26-50 years	27337	56.000%
Work5165	Age group: 51-65 years	8744	44.400%
Seek15	Person out of work unwilling to seek work	34954	96.800%
Seek15male	Man out of work unwilling to seek work	8293	92.500%
Sex	Sex (0 for female, 1 for male)	107832	50.400%
Femalehead	Is the household a female?	124835	1.190%
Highestclasspassed1	Highest class attained (household)-Primary	28650	32.251%
Highestclasspassed2	Highest class attained (household)-Middle	28650	19.494%
Highestclasspassed3	Highest class attained (household)- Secondary	28650	35.263%
Highestclasspassed4	Highest class attained (household)-University	28650	12.251%
Curr2	Current enrollment: primary school	26437	52.500%
Curr3	Current enrollment: middle school	26437	17.400%
Curr4	Current enrollment: secondary school	26437	15.200%
Curr5	Current enrollment: university	26437	5.590%
Region	region of residence (0 for rural area, 1 for urban area)	108469	39.100%
Province 1	Punjab	108469	39.773%
Province 2	Khyber Pakhtunkhwa	108469	23.670%
Province 3	Sindh	108469	20.823%
Province 4	Balochistan	108469	15.774%

inference on the sign and significance of the relationship between the receipt of foreign and internal remittances on the one hand and labour participation of the household members on the other. However, it fails to deal with the potential self-selection problem. Remittance-receiving households may not be randomly selected, and may differ from non-migrant households in such characteristics as motivation, ability and skills to work. These unobserved features might not only influence a household's likelihood of receiving remittances, but could also affect the household members' decision to participate in the labour market (Gorlich et al., 2007).

The use of Propensity Score Matching is useful for handling such potential non-randomness of migrant households. The method consist of matching persons from remittance-receiving households with those from non-remittance-receiving ones, but similar observable characteristics (number of dependents in the household, female headship, highest education level attained by a member of the household, savings, urban or rural setting, and province of residence). First, the probability of receiving remittances given various household covariates is calculated alternatively using probit and logit models. This gives the propensity scores for observed covariates by ranking individuals from receiving and non-receiving households. From this, difference between labour participation of treated group (individuals from remittance-receiving households) and non-treated group (individuals from non-remittance-receiving households) is calculated. This difference is averaged out to give the Average Treatment effect on the Treated (ATT). Propensity Score Matching is considered appropriate in the cases with a small treated group and a large control group. In the dataset used for the study, only 4.3 percent and 8.3 percent households receive foreign and internal remittances respectively. The use of this technique is therefore warranted.

Different econometric methods can be used for matching the treated and control groups. In this study, two commonly used methods, Nearest Neighbour (NN) and Kernel propensity score matching are alternatively used. As a robustness check, the Nearest Neighbour estimation is also carried

out using logistic regression for the first step (results not given to conserve space). The study also tests for the balancing property to make sure that observations with same propensity score have same distribution of observable characteristics regardless of their treatment status.

5. Key findings

5.1 Participation in the Labour Force

Results for probit estimations shown in table 3 indicate a strong, negative association of foreign remittances with the likelihood to work as compared to an insignificant one for domestic remittances. Members of foreign remittance-receiving households have a lower marginal probability to work (0.34) than those from non-recipient households (0.63). The marginal probability for internal remittance recipients is, as before, less different from that of non-recipients (0.52 against 0.61 respectively).

According to these results, foreign remittances appear to be among three factors having a substantial impact on the probability of a person active in the labour market, the other two being the person's gender and whether or not the household is female headed. This last factor reflects the fact that households headed by females are at an average much poorer than those with male heads (the two households have an average income of Rs. 43 thousand and Rs. 100 thousand respectively). The level of household's education also seem to play a role, as members from more educated households have a higher probability to work.

The labour participation effect of remittances is found to vary with age (Acosta 2011, Gorlich et al 2007). Accordingly, the study considers the impact with respect to three age categories: young (15 – 25), middle aged (26– 50) and senior (51 – 65). The findings for these age categories concur with the baseline model. The demographically bigger categories of young and middle aged workers indicate a lower participation in the labour

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Table 3a
Remittances and Labour Participation (aggregate and age wise)-Probit Estimation

	Labour Participation		Age 15-25		Age 26-50		Age 51-65	
	Foreign	Internal	Foreign	Internal	Foreign	Internal	Foreign	Internal
Forrem	-0.738*** (0.179)		-0.569** (0.253)		-1.044*** (0.334)		0.666* (0.357)	
Age	-0.00817*** (0.00313)	-0.00873*** (0.00289)						
Sex	2.125*** (0.0880)	2.017*** (0.0815)	1.889*** (0.131)	1.815*** (0.123)	2.528*** (0.133)	2.415*** (0.122)	2.621*** (0.363)	2.267*** (0.320)
Dependent	0.0176 (0.0162)	0.0244* (0.0146)	0.0292 (0.0237)	0.0336 (0.0219)	0.0384 (0.0299)	0.0251 (0.0265)	-0.118** (0.0476)	0.672 (0.0445)
Femalehead	0.820* (0.450)	0.620* (0.325)			1.359*** (0.517)	0.334 (0.408)		0.672 (0.783)
Highest class passed	0.107*** (0.0397)	0.128*** (0.0371)	-0.0645 (0.0671)	-0.0604 (0.0633)	0.172** (0.0676)	0.201*** (0.0636)	0.0174 (0.111)	0.0806 (0.0983)
Insaving	-0.0413 (0.0332)	-0.0540* (0.0308)	-0.0539 (0.0522)	-0.0585 (0.0488)	-0.0519 (0.0510)	-0.0743 (0.0476)	0.0669 (0.109)	0.0239 (0.0239)
Region	-0.109 (0.0839)	-0.0519 (0.0785)	0.0617 (0.129)	0.124 (0.121)	-0.311** (0.140)	-0.280** (0.133)	-0.395 (0.275)	-0.380 (0.252)
Province	-0.0738* (0.0378)	-0.0659* (0.0357)	-0.0835 (0.0577)	-0.0956* (0.0554)	-0.126** (0.0628)	-0.0593 (0.0598)	0.0213 (0.122)	-0.0177 (0.110)
Interim		-0.243 (0.148)		-0.205 (0.237)		0.295 (0.263)		-0.344 (0.370)
Constant	-0.453 (0.370)	-0.378 (0.346)	-0.306 (0.582)	-0.281 (0.548)	-0.580 (0.564)	-0.440 (0.531)	-1.933 (1.244)	-1.301 (1.131)
Observations	1.576	1.756	565	627	801	886	166	192

market among the members of foreign remittance-receiving households. The young have the lowest marginal probability to work, whereas the fall in marginal probability is the greatest among foreign remittance-receiving middle-aged individuals. Internal remittances do not seem to modify the labor participation of the recipients.

Working age women have a much higher probability of non-participation than their male counterparts (table 5). The marginal probability to work among foreign remittance-receiving females is 1.6 percent as compared to 15 percent among the non-recipient women; the corresponding figures for men are 66 percent and 86 percent. An interesting finding is that women from more educated households have a higher probability to work than those from less educated households. A household's geographical location also influences its labour participation. Rural foreign remittance recipients show less likelihood of working than do their urban counterparts. A rural recipient of foreign remittances has a 34 percent lower marginal probability to work than a non-recipient, while an urban foreign remittance receiver has an 18 percent less marginal probability. In rural areas, households with female heads of households and high number of dependents at home have a relatively higher probability to work, whereas wealthy households show a lower likelihood of labour participation. This labour supply behavior probably points to the nature of work available in the rural areas. Mostly related to agriculture and livestock, work in the rural areas is often physically taxing and hazardous. The rate of labour market participation is therefore lower for wealthy households and is higher for less prosperous ones. The indicator for residence in one of the four provinces also points to lower rural labour participation, given the negative sign for other provinces as compared to the more urban Punjab taken as the default province. The results for foreign remittances are generally significant at 1 percent level of significance.

The model was checked for potential mis-specifications, and is found robust to a battery of tests. Nevertheless, as mentioned in the previous section, using probit for the study of remittances leaves the problem of

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Table 3b
Marginal Probabilities

	Baseline equation		age 15-25		age 26-50		age 51-65	
	Forrem	Intrem	Forrem	Intrem	Forrem	Intrem	Forrem	Intrem
0	0.6364 (0.015)***	0.6182 (0.014)***	0.5271 (0.225)***	0.5029 (0.024)***	0.773 (0.020)***	0.753 (0.20)***	0.597 (0.049)*	0.600 (0.043)*
1	0.3484 (0.642)***	0.5232 (0.569)***	0.308 (0.0856)***	0.421 (0.089)***	0.385 (0.124)***	0.836 (0.063)***	0.819 (0.085)***	0.464 (0.14)***

Table 4
Remittances and Labour Participation (aggregate and age-wise)-Nearest Neighbour and Kernel PSM

Baseline Equation	NN				Kernel			
	Treated	Controls	Difference	S.E.	Treated	Controls	Difference	S.E.
Forrem	0.4	0.626	-0.226	0.057	0.440	0.601	-1.61	0.044
Intrem	0.44	0.553	-0.11	0.077	0.44	0.60	-0.161	-0.161
Age 15-25								
Forrem	0.406	0.75	-0.343	0.14	0.406	0.501	-0.095	0.092
Intrem	0.339	0.509	-0.16	0.11	0.33	0.50	-0.16	0.07
Age 26-250								
Forrem	0.375	0.625	-0.25	0.14	0.375	0.677	-0.302	0.88
Intrem	0.6	0.58	0.02	0.10	0.6	0.67	-0.7	0.07
Age 51-65								
Forrem	0.625	0.5	0.125	0.263	0.625	0.603	0.021	0.19
Intrem	0.434	0.739	-0.30	0.14**	0.434	0.621	-0.186	0.11

potential self- selection unresolved. For this purpose, the study resorted to propensity score matching, controlling for demographic, economic and geographical factors that determine the receipt or not of foreign and internal remittances. Table 4 gives the results of our baseline model using the Nearest Neighbour and Kernel propensity score matching techniques. The findings confirm the negative participation impact of foreign remittances. The average treatment effect of the treated (ATT) is -0.22 significant at 1 percent. This difference is strong and robust to the use of different PSM techniques. The effect for internal remittances of -0.11 is same as found with baseline probit model and is statistically insignificant.

As a robustness check, the authors also tested the models using logit instead of probit for ranking the remittance receiving and non-receiving households. The results of these estimations (not shown) generally concur with the probit estimations.

The above mentioned differing labour participation effects for foreign and internal remittances can be traced to the different socioeconomic conditions of the two sets of households. Foreign remittance-receiving households have an above average household income, while those receiving transfers from within the country earn much below the national average. In the study sample, foreign remittance recipients earn 82 percent more than do the recipients of internal remittances.

This differential impact is also evident in the age-wise estimations. The average treatment effects for the young and middle aged categories are significant at -0.34 and -0.25 points respectively in case of foreign remittances, while those for internal remittances are statistically insignificant. The findings for the senior category (51 – 65 years) are telling. The ATT for foreign remittances is insignificant, while that for internal remittances is significant -0.30. Majority of the members from internal remittances-receiving households work as paid employees or as own cultivators, and are less involved in non-agricultural self- employment than foreign remittance recipients. This suggests that internal remittance receiving

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Table 5a
Remittances and Labor Participation (sex & region-wise) Probit Estimation

	Male participation		Female participation		Urban participation		Rural participation	
	Foreign	Internal	Foreign	Internal	Foreign	Internal	Foreign	Internal
Forrem	-0.654*** (0.205)		-1.113** (0.525)		-0.456* (0.249)		-0.885*** (0.251)	
Age	-0.00957*** (0.00358)	-0.0107*** (0.00334)	-0.00261 (0.00577)	0.000253 0.00518	-0.0124*** (0.00420)	-0.0137*** (0.00393)	-0.00464 (0.00482)	-0.00480 (0.00437)
Sex					2.181*** (0.115)	2.148*** (0.109)	2.085*** (0.143)	1.858*** (0.129)
Dependent	0.0026 (0.0914)	0.0314* (0.0716)	0.00564 (0.0306)	0.0149 (0.0277)	-0.00886 (0.0237)	-0.00120 (0.0226)	0.0514 (0.0233)	0.0604*** (0.0198)
Femhead			0.844 (0.553)	0.336 (0.337)	0.487 (0.615)	0.112 (0.430)	1.341** (0.615)	1.570*** (0.578)
Highestclasspassed	0.0759 (0.0483)	0.0935** (0.0461)	0.163** (0.0719)	0.183*** (0.0657)	0.0947* (0.0529)	0.123** (0.0505)	0.127** (0.0616)	0.154*** (0.0570)
Insaving	-0.0554 (0.0424)	-0.0590 (0.0399)	-0.0222 (0.0527)	-0.0561 (0.0503)	0.0492 (0.0432)	0.0379 (0.0405)	-0.171*** (0.0553)	-0.184*** (0.0502)
Region	-0.0624 (0.101)	0.0509 (0.0970)	-0.224 (0.155)	-0.262* (0.138)				
Province	-0.0510 (0.0469)	-0.0639 (0.0444)	-0.151** (0.0700)	-0.0799 (0.0623)	-0.0304 (0.0514)	-0.0333 (0.0491)	-0.126** (0.0564)	-0.968* (0.0530)
Intrem		-0.551*** (0.163)		0.144 (0.191)		-0.0867 (0.194)		-0.379* (0.225)
Constant	1.849*** (0.474)	1.783*** (0.450)	-0.696 (0.594)	-0.595 (0.561)	-1.367*** 0.493	-1.264*** (0.468)	0.762 (0.580)	0.831 (0.535)
Observations	1.024	1.114	552	642	902	1.011	674	745

households quit their more physically demanding and less paid work as soon as their economic conditions allow. Alternatively, their departure from the labour market may be dictated by health concerns.

Internal remittances, therefore, help the elder workers of the households to reduce their labour participation and consume more leisure. Conversely, the senior members from foreign remittance-receiving households do not significantly change their labour participation. Here, it needs to be noticed that the results of probit and PSM estimations both show a positive sign, and are weakly significant for the probit estimation. This may be associated with lower credit constraints of the household allowing the senior members to engage in self-run ventures (more on this in the subsection 5.4). The lower labour participation of the middle-aged foreign remittance recipients coupled with no drop in labour participation of the old age group points to the possibility that the need or the incentive for leaving the labour market is the greatest for the middle age category. Whether for child care, taking up other household-related non-market activities, or simply for consuming more leisure, persons in the middle age group face a higher incentive structure and may have higher reservation wages.

Similar to probit estimations, the PSM results for both male and female labour participation given in table 6 are negative and significant in the case of foreign remittance recipients. Similarly, male recipients of internal remittances show a lower labour participation than their non-recipient counterparts, while female remittance recipients show no significant treatment effect. Region-wise estimations show lower labour participation in rural as well as urban areas for foreign remittance recipients, whereas the participation of internal remittance-receiving households significantly drops only in rural areas. These findings probably reflect the fact that income level in the urban areas is much higher (average income being Rs. 102 thousand) than the rural areas (average income being Rs. 63 thousand). This implies that the reservation wages in the rural areas might be lower than in the cities. Work in the rural areas is often more challenging and dangerous,

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Table 5b
Marginal Probabilities

	Urban Workers		Rural workers		Male workers		Female workers	
	Forrem	Intrem	Forrem	Intrem	Forrem	Intrem	Forrem	Intrem
0	0.587 (0.20)***	0.57 (0.019)***	0.70 (0.02)***	0.67 (0.02)***	0.859 (0.01)***	0.85 (0.01)***	0.155 (0.16)***	0.15 (0.01)
1	0.406 (0.09)***	0.54 (0.07)***	0.36 (0.09)***	0.52 (0.86)***	0.66 (0.07)***	0.69 (0.055)***	0.016 (0.02)	0.194 (0.049)***

Table 6
Remittances and Labour Participation (Sex and Region-Wise) – Nearest Neighbour and Kernel PSM Estimations

	NN				Kernel			
	Treated	Controls	Difference	S.E.	Treated	Controls	Difference	S.E.
Maleworker								
Forrem	0.65	0.88	-0.22	0.10	0.65	0.85	-0.20	0.7
Intrem	0.667	0.878	-0.21	0.07	0.66	0.85	-0.18	0.5
Femaleworker								
Forrem	0.032	0.35	-0.32	0.10	0.03	0.18	-0.14	0.03
Intrem	0.22	0.16	0.05	0.08	0.22	0.16	0.05	0.05
Urban								
Forrem	0.43	0.71	-0.28	0.15	0.43	0.57	-0.13	0.09
Intrem	0.43	0.76	-0.32	0.09	0.43	0.56	-0.12	0.06
Rural								
Forrem	0.73	0.72	-0.34	0.12	0.37	0.64	-0.26	0.07
Intrem	0.44	0.66	-0.22	0.11	0.43	0.56	-0.12	0.06

and receipt of remittances make it possible for the rural workers to move out of them.

Now that the negative participation effects of remittances are established, the authors further on examine the activities which non-participating working age individuals pursue.

5.2 Activities in Case of Non-participation

Inactivity among remittance recipients may be due to three reasons: leisure consumption, home production, and pursuit of education (Görlich et al., 2007). The first effect, called the Disincentive effect, implies that the recipient's reservation wage rises above the prevailing market wages, and consumption of leisure becomes a better alternative. This effect can be estimated by studying the association of remittances with the likelihood of the person declaring unwilling to work. The second effect, called the home labour substitution effect, occurs when members of remittance-receiving households withdraw from the labour market to take up household responsibilities. The departure of a migrant increases the household duties of the members staying back, and receipt of transfers give them the possibility to reduce their labour participation and tend to the household. The last effect pertaining to education is most likely among young members of remittance receiving households. Partly thanks to lower financial constraints, and partly due to relatively strong higher education incentives facing the migrant households, young members of the household could be kept out of labour market into the school for long.

Given data limitations, the authors are unable to study the home production effect. The study analyses the disincentive effect through the variable "seekingwork" which takes the value of 1 if the respondent is out of work and not looking for work. The education effect of remittances is studied by examining the probability of the member being enrolled at school. Four categories of enrollment are considered: primary

(grade 1 to 5), middle school (grade 6 to 8), secondary and higher secondary (grade 9 to 12), and higher education (university education).

Table 7a
Remittances & Probability of Persons Seeking a Job-Probit Estimation

Variables	Person Seeking Work		Men Seeking Work	
	Foreign	Internal	Foreign	Internal
Forrem	-0.331 (0.315)		-0.846* (0.451)	
Age	0.00480 (0.00557)	0.0113** (0.00550)	0.0184*** (0.00559)	0.0290*** (0.00649)
Sex	-0.926*** (0.226)	-1.067*** (0.213)		
Dependent	0.0322 (0.0388)	0.0197 (0.0355)	0.00974 (0.0532)	-0.0206 (0.0440)
Highestclasspassed	0.00583 (0.0850)	0.00355 (0.0854)	0.0597 (0.136)	0.0854 (0.136)
Lnsaving	0.0334 (0.0597)	0.0508 (0.0623)	-0.00566 (0.114)	-0.0682 (0.109)
Region	-0.547** (0.248)	-0.322* (0.193)	-1.041*** (0.388)	-0.795*** (0.282)
Province	0.337 (0.107)	0.0699 (0.0978)	0.253* (0.134)	0.277** (0.127)
Intrem		-0.481** (0.235)		-1.188*** (0.364)
Constant	1.772** (0.777)	1.254 (0.801)	0.769 (1.268)	0.867 (1.221)
Observations	617	699	156	179

Table 7b
Marginal Probabilities

	Person Seeking Work		Men Seeking Work		Women Seeking Work	
	Forrem	Intrem	Forrem	Intrem	Forrem	Intrem
0	0.97 (0.008)***	0.97 (0.007)***	0.94 (0.02)***	0.94 (0.02)***		0.98 (0.005)***
1	0.94 (0.031)***	0.92 (0.028)***	0.76 (0.12)***	0.64 (0.10)***		0.98 (0.01)***

Results of probit estimation given in table 7 show an insignificant association of foreign remittances with the likelihood of being unwilling to work as opposed to internal remittances' significantly negative one. Internal remittance receiving household members have a slightly lower marginal probability of being unwilling to work than the non-receiving ones.

PSM results portray a similar picture for foreign remittances (table 8). This lower likelihood to be unwilling to work is particularly the case for male household members, whereas female members show no more willingness to look for work. The sign of average treatment effect for female willingness to work is invariably positive in the case of foreign remittances, and agrees with the strongly negative female participation effect found in the previous subsection.

Over all, these findings indicate that the disincentive effect may not be a reason behind foreign recipient's lower labour participation. Receipt of foreign remittances do not appear to significantly change the willingness to work of the currently out of work household members, and in the case of

Table 8
Remittances & Probability of Persons Seeking Job-Nearest Neighbour & Kernel
PSM Estimations

	NN				Kernel			
	Treated	Controls	Difference	S.E.	Treated	Controls	Difference	S.E.
Person Seeking Work								
Forrem	0.933	0.911	0.02	0.06	0.92	0.96	-0.38	0.04
Intrem	0.90	0.94	-0.04	0.04	0.90	0.90	-0.05	0.03
Men Seeking Work								
Forrem	0.8	1	-0.2	0.10*	0.8	0.92	-0.12	0.11
Intrem	0.72	0.95	-0.22	0.12	0.76	0.91	-0.15	0.10
Women Seeking Work								
Forrem	1	0.9	0.1	0.07	1	0.98	0.01	0.008
Intrem	0.98	0.92	0.05	0.03	0.98	0.98	-0.001	0.02

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Table 9a
Remittances & Education Enrollment-Probit Estimation

	Current Enrollment: Primary		Current Enrollment: Middle		Current Enrollment: Secondary		Current Enrollment: Tertiary	
	Foreign	Internal	Foreign	Internal	Foreign	Internal	Foreign	Internal
Forrem	-0.250 (0.165)		0.372** (0.164)		0.279 (0.176)		-0.177 (0.353)	
Age	-0.198*** (0.0112)	-0.195*** (0.0102)	0.0734*** (0.00679)	0.704*** (0.00624)	0.178*** (0.0117)	0.177*** (0.0108)	0.229*** (0.0246)	0.236*** (0.0234)
Sex	-0.106 (0.0806)	-0.0944 (0.0748)	0.0813 (0.0847)	0.101 (0.0790)	0.137 (0.104)	0.102 (0.0957)	-0.0195 (0.141)	-0.0538 (0.131)
Hhsize	-0.000881 (0.0109)	-0.000641 (0.00975)	0.00606 (0.0113)	-0.00135 (0.00984)	0.0210 (0.0139)	0.0810 (0.0113)	0.00623 (0.0221)	-0.00352 (0.0189)
Lnsaving	-0.0462 (0.0350)	-0.0573* (0.0314)	-0.0752 (0.0342)	-0.0660 (0.0313)	0.00631 (0.0449)	0.0388 (0.0405)	-0.0393 (0.0630)	-0.0449 (0.0585)
Region	-0.185** (0.0783)	-0.203*** (0.0734)	0.0116 (0.0833)	0.0271 (0.0783)	0.0350 (0.0993)	-0.0190 (0.0931)	0.257* (0.149)	0.239* (0.143)
Province	0.121*** (0.0356)	0.927*** (0.0336)	0.0189 (0.0372)	0.0277 (0.0352)	-0.149*** (0.0468)	-0.0973** (0.0436)	0.148*** (0.0542)	0.131** (0.0524)
Intrem		-0.258* (0.131)		0.0599 (0.130)		(0.0365) (0.149)		-0.225 (0.195)
Constant	2.631*** (0.393)	2.756*** (0.357)	-1.214*** (0.353)	-1.226*** (0.325)	-3.504*** (0.473)	-3.842*** (0.440)	-4.861*** (1.059)	-4.770*** (0.997)
Observations	1,413	1,600	1,413	1,600	1,413	1,600	1,413	1,600

internal remittances, may even encourage the members, particularly the men, to look for work. The latter may be due to the less binding financial constraints of the recipient family, which may allow the potential members to look for a better work. Internal remittances, in such a case, not only increase their reservation wages, but also add to their motivation to look for a correspondingly better paid job.

In terms of the remittances' effect on school enrollment, probit results given in table 9 show a mixed picture. Foreign remittances appear to increase the likelihood of recipient households going to middle school (grade 6 to 8), while their association with other levels of schooling is insignificant. The findings from propensity score matching are somewhat different, as foreign remittance recipient households do not seem to differ from non-recipient households in any enrollment category (table 10). The results for internal remittances are not robust, as we obtain different signs and levels of significance using different methods. The ATT is positive for three out of four categories, and significant for secondary school enrollment (grade 9 to 12), while it is significant and negative for primary schooling.

This subsection determines that there is some evidence of increased likelihood of school enrollment among foreign remittance receiving households, though the impact is significantly visible only at the middle school level. Next, the study turns to the quantity of work supplied by the remittance receiving household.

5.3 Quantity of Labour Supplied

The quantity of labour is usually studied in the literature in terms of hours worked per week. Given the nature of HIES data used in this study, the authors are able to examine only the months worked during the year preceding the survey, and the number of days worked in the month prior to the survey. In this survey, 93 percent of workers from foreign remittance receiving households worked for 12 months, implying an uninterrupted or non-seasonal job. The proportion for non-recipient

Table 9b
Marginal Probabilities

	Primary School		Middle School		Secondary School		University	
	Forrem	Intrem	Forrem	Intrem	Forrem	Intrem	Forrem	Intrem
0	0.50 (0.01)***	0.48 (0.01)***	0.15 (0.009)***	0.15 (0.009)***	0.07 (0.006)***	0.07 (0.006)***	0.01 (0.005)**	0.01 (0.005)*
1	0.40 (0.06)***	0.38 (0.04)***	0.25 (0.05)***	0.17 (0.03)***	0.11 (0.03)***	0.08 (0.021)***	0.008 (0.009)	0.007 (0.004)

Table 10
Remittances & Education Enrollment- Nearest Neighbour & Kernel PSM Estimations

	NN				Kernel			
	Treated	Controls	Difference	S.E.	Treated	Controls	Difference	S.E.
Primary School								
Forrem	0.39	0.55	-0.15	0.11	0.39	0.52	-0.13	0.05
Intrem	0.404	0.60	-0.20	0.09	0.40	0.52	-0.11	0.04
Middle School								
Forrem	0.269	0.12	0.14	0.08				
Intrem	0.19	0.13	0.06	0.06	0.19	0.16	0.03	0.034
Secondary School								
Forrem	0.21	0.14	0.07	0.08				
Intrem	0.19	0.08	0.10	0.05	0.19	0.15	0.04	0.03
University School								
Forrem	0.05	0.07	-0.02	0.05	0.08	-0.03	-0.03	0.02
Intrem	0.08	0.04	0.03	0.04	0.07	0.007	0.007	0.02

Table 11
Remittances & Quantity of Labour Supplied

	Labour Supply: Months		Labour Supply: Days	
	Foreign	Internal	Foreign	Internal
Forrem	-0.979 (0.362)		0.551 (0.452)	
Age	0.131*** (0.00367)	0.0119 (0.00360)	0.0376*** (0.00914)	0.0310*** (0.00931)
Sex	1.194*** (0.302)	1.036*** (0.276)	0.354 (0.500)	0.387 (0.491)
Dependent	-0.0361 (0.0220)	-0.303 (0.0198)	0.0651 (0.0420)	0.0474 (0.0414)
Femalehead	-1.072 (1.572)	-1.576 (1.291)	3.203*** (0.532)	-0.679 (2.276)
Highestclasspassed	0.184*** (0.0475)	0.180*** (0.0463)	0.123 (0.106)	0.209** (0.106)
Insaving	0.0723* (0.0426)	0.813** (0.0414)	0.216** (0.0870)	0.233*** (0.0834)
Region	0.220* (0.114)	0.241** (0.118)	0.412* (0.239)	0.280 (0.231)
Province	-0.0310 (0.0498)	-0.0109 (0.0478)	-0.263** (0.117)	-0.262** (0.118)
Intrem		0.165 (0.232)		-0.322 (0.621)
Constant	8.961*** (0.645)	8.975 (0.643)	23.18*** (1.141)	23.14*** (1.080)
Observations	697	765	961	1,051
R-Squared	0.136	0.128	0.050	0.043

workers is 86 percent. Similarly 88 percent workers from foreign remittance receiving households report having worked 25 days or more during the last month as opposed to 77 percent of non-recipient ones. The figures for internal remittance-receiving and non-receiving workers are about the same, showing little variation in the work supplied by two sets of households. The study performs Ordinary Least Square (OLS) regressions to analyze the impact of remittances on the quantity of labour supplied. Results shown in table 11 are insignificant, indicating no evidence of a statistically

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Table 12a
Remittances & Work Status-Probit Estimation

	Self Employed		Paid Employee		Own Cultivator	
	Foreign	Internal	Foreign	Internal	Foreign	Internal
Forrem	0.540** (0.260)		-0.199 (0.245)		-0.297 (0.516)	
Age	0.0133*** (0.00380)	0.0127*** (0.00366)	0.000515 (0.00338)	0.00101 (0.00325)	0.0297*** (0.00508)	0.0277*** (0.00487)
Sex	0.314 (0.227)	0.345* (0.201)	0.0810 (0.0151)	-0.0150 (0.137)		
Dependent	-0.00423 (0.0207)	-0.00319 (0.0193)	0.0107 (0.0163)	0.0156 (0.0150)	-0.00813 (0.0263)	-0.0230 (0.0231)
Highestclasspassed	-0.106** (0.0513)	-0.116** (0.0482)	0.264*** (0.0422)	0.280*** (0.0408)	-0.0150 (0.0689)	-0.0364 (0.0664)
Insaving	0.182*** (0.0470)	0.201*** (0.0444)	-0.218*** (0.0371)	-0.236*** (0.359)	0.113* (0.0640)	0.113* (0.0614)
Region	0.376*** (0.117)	0.389*** (0.112)	0.452*** (0.0883)	0.438*** (0.0848)	-1.259*** (0.217)	-1.242*** (0.199)
Province	0.00808 (0.0544)	0.0129 (0.0512)	-0.0319 (0.0420)	-0.0188 (0.0403)	-0.0185 (0.0749)	-0.0382 (0.0719)
Intrem		0.349* (0.209)		-0.145 (0.171)		0.799** (0.266)
Femalehead				0.794 (0.658)		
Constant	-3.875 (0.597)	-4.504*** (0.559)	1.672*** (0.429)	1.847*** (0.412)	-3.399*** (0.707)	-3.136*** (0.683)
Observations	959	1,046	959	1,051	876	943

significant effect of remittances on the quantity of labour. Therefore, it cannot be decided about the reduction or otherwise of quantity of labour supplied in reaction to remittance receipts. This notwithstanding, the nature of work activity may well change due to remittances. This is studied in the following subsection.

5.4. Activities in case of participation

Participation of the households is studied in three types of activities and it is examined whether the receipt of remittances modifies the person's probability of being self-employed in the non-agricultural sector, paid employee or own-cultivator. A positive sign for self-employment or own-cultivation would suggest better financial conditions leading to the person investing and running his/her private business. The results of probit estimations (table 12) indicate a significant and positive association between foreign remittances and the likelihood of being self-employed. There is also a strong positive association of internal remittances with own cultivation compared to a non-significant one for foreign remittances. As to the Nearest Neighbour and Kernel matching results, the average treatment effect for the three activities are insignificant even though with similar signs to the probit estimations (table 13). Only the internal remittance ATT for own cultivation is statistically significant.

Over all, the likelihood of being self-employed or tilling ones land appears to increase among remittance receiving households (these findings are however not robust). Therefore, there is a tentative evidence of the activity substitution effect of remittances.

6. Concluding Remarks

This paper studied the labour participation and supply effects of foreign and internal remittances using probit and propensity score matching techniques. It finds a sizeable drop in the labour participation of foreign remittance receiving households. This corroborates the widespread negative participation impact found in the literature. However, the more numerous internal remittances do not appear to have a significant impact on the

Table 12b
Marginal Probabilities

	Self Employed		Paid Employee		Own Cultivator	
	Forrem	Intrem	Forrem	Intrem	Forrem	Intrem
0	0.10 (0.010)***	0.111 (0.01)***	0.62 (0.01)***	0.62 (0.015)***	0.02 (0.007)***	0.02 (0.006)***
1	0.23 (0.07)***	0.192 (0.05)***	0.54 (0.09)***	0.57 (0.06)***	0.01 (0.017)	0.13 (0.02)***

Table 13
Remittances & Work Status-Nearest Neighbour & Kernel PSM Estimations

	NN				Kernel			
	Treated	Controls	Differene	S.E.	Treated	Controls	Difference	S.E.
Self-Employed								
Forrem	0.26	0.16	0.1	0.10	0.26	0.12	0.14	0.08
Intrem	0.18	0.13	0.05	0.07	0.18	0.12	0.06	0.05
Paid-Employee								
Forrem	0.53	0.63	-0.1	0.13	0.53	0.61	-0.08	0.09
Intrem	0.57	0.64	-0.067	0.99	0.57	0.63	-0.05	0.06
Own-Cultivator								
Forrem	0.033	0.16	-0.11	0.09	0.05	-0.02	-0.02	0.03
Intrem	0.11	0.01	0.10	0.04	0.05	0.066	0.066	0.04

participation rate of the individuals from recipient households. Households receiving transfers from within the country are at an average much poorer than the relatively better off foreign remittance receiving households. The authors hypothesize that the addition of non-labour income resulting from internal remittances does not raise the reservation wages of the recipient household members to warrant a reduction in labour participation. The drop in labour participation in foreign remittance households is particularly acute in rural areas and among women. Young and middle age groups are more likely to reduce their labour market participation than the old age group. Among the recipients of internal remittances, only the old age group of workers shows a significant drop in labour participation. This may owe to the low paid, more physical nature of work available to the comparatively poorer internal remittance receiving households, which might affect the old workers' health and cause their early exit from the

labour market.

Among other questions examined, there is some evidence of higher probability of school enrollment among remittance recipients, but none for lesser willingness to look for work among those out of work. Working individuals do not appear to change their amount of work significantly, but they are more likely to be self-employed (if receiving foreign remittances) and own-cultivating (if receiving internal remittances).

To sum up, the study indicates a relatively minor labour effect of remittances, especially because the more numerous internal remittances appear to have no significant labour participation impact. This small negative effect needs to be seen in the context of an economy with generally low labour participation rates and considerable underemployment. Besides, the presence of education effect and self-employment-related investment should temper the remittances' damaging effects on the labour market. Remittances may then be a harmless minor factor in the evolution of Pakistan's labour market.

The analysis of study mostly dealt with the participation of labour force in the context of foreign and internal remittances. Another question worth probing is how the members of remittance receiving households vary the number of hours they work. The study of their wage rates, and subsequently their productivity, can shed more light on the labour supply effects of remittances. Due to data limitations, this study could not examine the labour market participation and supply effects of remittances with respect to the amounts transferred. Analysis of this question in the future could throw light on the moral hazard problems and the potential for a dependency mindset among the recipient households proposed in the literature.

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