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Gender Issues and Horticulture Markets in Pakistan

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This paper reviews the available literature and information on gender aspects of Pakistan agriculture and the socio-cultural factors conditioning and constraining female participation in economic activities, (b) describes the main strands of the international literature on the impact of modernisation of agricultural value chains on women, (c) and discusses the experience of an initiative by the multinational firm Nestle to develop a modern value chain in the Pakistan dairy sector involving rural women and reports on a case study of two villages where Nestle operates, and (e) draws out the implications for improving gender outcomes of agricultural value chain modernisation. It highlights the major role women play in production and cultivation of horticultural industries and the near total exclusion of women in the marketing sphere, thereby constraining direct access to cash incomes.

Gender Issues and Horticulture Markets in Pakistan

Women play a major role in the agriculture sector of Pakistan, including its livestock and horticultural industries, but occupy a subordinate position in decision making and direct access to revenues. Major policy or institutional reforms that change the patterns of resource use, productivity, profitability and revenues are likely to produce outcomes that affect not only the overall welfare of rural households and agricultural produce consumers, but also have gender-differentiated impacts. This means that analyses of the potential impact of policy measures for reforming markets must pay attention not only to their overall impact on household incomes and welfare, but also to the specific impact such reforms will have on women. Such gendered analyses must be grounded on an understanding of the existing structures of gender relations and their socio-cultural roots, and the dynamic context in which agricultural markets reforms will be implemented.

In this paper we (a) briefly review the available literature and information on gender aspects of Pakistan agriculture and the socio-cultural factors conditioning and constraining female participation in economic activities, (b) review the main strands of the international literature on the impact of modernisation of agricultural value chains on women, (c) and analyse the experience of a specific development in the dairy sector of Pakistan – the initiative by the multinational firm Nestle to develop a modern value chain in the Pakistan dairy sector, and implications for improving gender outcomes of agricultural value chain modernisation.

Women's role in agriculture in Pakistan

Pakistan has the one of second lowest recorded formal female labour force participation (FLFP) rates in Asia, well below that of neighbouring India, but also of comparable Muslim majority countries like Bangladesh and Indonesia. Low participation rates are attributed partly to cultural restrictions on females working outside the home or own farm.¹ But it has a highly 'feminised' agriculture with women contributing a large and increasing share of agricultural labour. While only about a quarter of the total number of females of working age are engaged in paid work, over 70% of them are employed in the agricultural sector. The female participation (and female share) in the paid agricultural labour force has been increasing over time, while the share of males engaged in paid work in agriculture has been decreasing (Table 1).

¹ While these restrictions apply in general to all females, women more affluent backgrounds or highly educated women face fewer social sanctions in engaging in paid work. But in fact there is a strong association between household poverty and women's labour force participation, with high rates of female labour force participation among women from the poorest households, who are forced to take up paid employment out of necessity (see, for example, Kabeer, 2012).

Table 1: Labour Force Participation and Employment in Agriculture by Gender

Year	Labour force participation rate (%)		Labour force Employed in agriculture (%)	
	Male	Female	Male	Female
2001 – 02	82.7	16.2	37.2	64.5
2003 – 04	82.7	18	37.0	66.6
2007 – 08	82.4	21.8	35.2	73.8
2010 – 11	81.9	24.4	34.7	74.2
2012 – 13	81.1	24.3	32.9	74.9

Source: Balagamwala, Gazdar and Mallah (2015) based on *Pakistan Employment Trends, 2013*

These very low *formal* labour force participation statistics of Pakistan, however, understate the actual contribution of female labour to productive economic activities. The majority of women continue to be involved in unpaid work on their own farms, and this is not counted and reported as work in labour force statistics (ADB, 2016). For example, in Punjab, “about 93 percent of women in Punjab do not own land, half of them are engaged as farm and family labour and around 75 percent of these receive no payment for their work” (Batool and Nosheen, 2015: p. 110).² In addition to household chores, females are also major contributors to the rural economy in all three sub sectors: crop production, livestock production and cottage industry. Women’s contribution is particularly large in the case of livestock, where their labour contribution often exceeds 70% of total labour. Not only do the formal labour force participation statistics ignore the huge unpaid labour contribution of females, but statistics under-report even the actual levels of paid labour force participation (Bari, 2000).

This increasing ‘feminization’ of the agricultural labour force is an outcome of the movement of males out of agriculture. In Pakistan, males have greater spatial and occupational mobility compared to females, and are in a better position to move into better-paid off-farm and non-agricultural jobs. “Women’s employment is limited by the same cultural restrictions that limit their access to education and health services, imposing serious constraints on their autonomy, mobility, and on the types of livelihoods that are available to them. Among those who do work, labour market participation is characterized by occupations that tend to be low wage and keep women close to home” (World Bank,

² See Jamali and Khowaja (2015) for the very similar situation in Sindh. Harvesting of cotton is regarded as almost exclusively women’s work (Siegmann and Shaheen 2008).

2015: 15). Indeed, the increasing FLFP is driven largely by ‘distress-employment’ where women are forced by economic necessity to undertake hired employment (Zaidi, Farooq et al, 2016). This is the situation throughout Pakistan, though there are regional variations (see Samee et. al. 2015).

But, despite this large female labour contribution to productive activities, females have little or no managerial control over agricultural management decisions: “...in spite of her roles and responsibilities in agriculture, women have minimal role in decision-making due to existing cultural norms” (Batool and Nosheen, 2016: p. 104). In Sindh, for example, where female involvement in cotton marketing is significantly higher than in many other cash crops, though more than 75 percent of women contribute to cotton harvesting, only a third have some involvement in marketing. In horticulture, women are heavily involved in production and harvesting activities but “are culturally constrained to participate in production and related activities and do not cross the boundaries defined by male family members “(Jamali and Kwoja, 2015: p. 129; see also Mangan and Ruthbah, 2018).

Socio-cultural Context in Pakistan and Gender Issues in Agriculture

The gender issues in agriculture must be viewed in the context of the very high levels of gender inequality in almost every major indicator (Table 2). The potential impact of modern value chains must be seen within a gender perspective that recognises the deep rooted socio-cultural constraints to female participation in specific economic activities including marketing, reflected in their low levels of ownership and control of physical and financial and human capital, and lack of skills, education and other forms of human capital. These are critical in determining the extent to which improvements in markets and modernisation of agricultural value chains can benefit rural women.

Pakistan ranks as low as 136 in world in the Gender Inequality Index (Human Development Report 2019), and is 151 in the Global Gender Gap index (which measures the gap between men and women in four categories: economic participation and opportunity, educational attainment, health and survival and political empowerment) (World Gender Gap Report 2020).

Table 2: Indicators of Gender inequality

	Labour Force Participation Rate (%)		GNI per capita (PPP2011 US\$)		Mean Years of Schooling		Gender Development Index	Gender Inequality Index	
	F	M	F	M	F	M		Value	Rank
Pakistan	23.9	81.5	1570	8605	3.8	6.5	0.747	547	136
Bangladesh	36.0	81.3	2373	5701	5.3	6.8	0.895	536	129
India	23.6	78.6	2625	10712	4.7	8.2	0.829	501	122

Notes:

a. GNI: Gross National Income per capita

b. The Gender Development Index indicates gender inequalities in achievement in the same three dimensions of the Human Development Index: health (measured by female and male life expectancy at birth), education (measured by female and male expected years of schooling for children and mean years for adults aged 25 years and older); and command over economic resources (measured by female and male estimated GNI per capita)

c. Gender Inequality Index reflects gender based inequalities in three dimensions: reproductive health, empowerment, and economic activity. Reproductive health is measured by maternal mortality and adolescent birth rates; empowerment is measured by the share of parliamentary seats held by women and attainment in secondary and higher education by each gender; and economic activity is measured by the labour market participation rate for women and men. The GII can be interpreted as the loss in human development due to inequality between female and male achievements in the three GII dimensions.

Source: UNDP: *Human Development Report 2019*

The situation is particularly bad in the agricultural sector and rural areas. Over 80 percent of the women are disempowered in terms of ownership of assets, control over income earned, and control over use of income earned despite their large contribution to productive activities (Ahmed, Hameed, Khan, and Rafi, 2016: p.415).

Many developments in the wider economy tend to exacerbate, rather than alleviate, gender inequality, given the specific socio-cultural context of Pakistan. As in many other developing countries, increasing feminisation of agriculture in Pakistan is taking place in the context of a relative decline in agricultural productivity and widening urban-rural income differences. Agriculture accounts for around a fifth to a quarter of GDP, but employs over 40 percent of the total labour force, indicating that agriculture has lower labour productivity than the rest of the economy. Consequently, there are large rural-urban income differences as well as large differences between urban and rural wages. In 2012 rural wages were 9.9% lower on average than in urban areas in Pakistan and this gap was larger for women. Controlling for factors such as education, age, female wages were on average only 55% of male wages in 2012 and it is less than 50% in agriculture which employs the vast majority of women. This gap has been widening over time (World Bank, 2016; see also Zaidi and Farooq et al, 2016).

These gender inequalities in wages are only one part of large gender gaps in most indicators of wellbeing. Women not only have lower rates of labour force participation and wages, but also have significantly lower health and nutrition levels, literacy, and mobility, with greater gaps in rural areas. Public expenditures on education (2% of GDP) and health (0.23% of GDP) overall are extremely low in Pakistan, so education and health indicators are unsatisfactory among both males and females, but female indicators are worse than those of males.³ In 2014, female literacy was 47% compared with a male literacy rate of 70%. Though girls' school enrolments have increased over time, gender gaps persist and are widest at middle school level and in rural areas.⁴ Gender parity has been almost fully achieved at graduate

³ These figures are from Zaidi, Farooq et al. (2016)

⁴ The low levels of transition from primary to middle school among girls is observed despite research findings that show that marginal rates of return to additional grades of completed schooling is significantly higher for

and postgraduate levels, but that does not lead to gender parity in the labour force, with the vast majority of female graduates not going into the labour force at all (except in medicine, where 58% do join the labour force).

These gender disparities are the outcomes of specific socio-cultural factors that affect their position in the household and wider society, their intra-household bargaining power, and their ability and willingness to participate in economic and market activities and related social interactions. The socio-cultural environment for females is changing in Pakistan, but any analysis of how changes in the agricultural systems, including changes in horticultural marketing, will affect the position of women must take into account the realities of existing socio-cultural norms into account.

The gender dimensions of social and economic activities in Pakistan should be understood in the context of the pervasive influence of 'Purdah' - the practice of gender segregation and the seclusion of women in public. It reflects a set of customary norms, beliefs and values that define the dominant models of masculinity and femininity and allocate men and women, boys and girls to different roles and responsibilities on the basis of these definitions, generally assigning a lower value to those aptitudes, abilities and activities conventionally defined as 'feminine' relative to those conventionally defined as 'masculine' (Kabeer, 2012). Purdah imposes a set of 'gender-specific constraints' on patterns of behaviour which apply to women and men by virtue of their gender. While the practice of female seclusion is often associated with Islamic communities, its widely practiced even among Hindu communities in India, and the specific form of these practices differs substantially not only across Islamic communities in different countries but also from place to place and between different ethnic and tribal groups even within a country (Obermeyer, 1992).⁵

Purdah encompasses a wide range of constraints on dress, patterns of social interaction and other forms of socially acceptable behaviour, but the most important aspects of Purdah that influence women's position in rural agricultural households in Pakistan are, (a) those that define her primary role to being a good domestic duties, and being a good wife and mother and, (b) those that restrict social interactions with outsiders, particularly with males outside the set of immediate family. While there are significant variations across regions and communities, in general she is not expected to be the primary bread winner of the family, to go outside the home and work to earn her living, or to be the primary decision maker in major household decisions.

These norms generate a social stigma on working outside home, reinforced by lack of safe public transport and security issues, resulting in low levels of (formal) labour force

females than for males (Aslam, 2009). This partly explained by lack of access to schools for girls in many parts of the country, but is also suggestive of social attitudes that inhibit sending older girls to schools.

⁵ In a comparative analysis of women's autonomy in India and Pakistan, Jejeebhoy and Sathar (2001) conclude that social institutions of gender within regions, rather than religion, determines the nature and strength of these practices: "There is little support for the argument that Muslim women are disadvantaged in terms of autonomy, at least when compared to Hindu women from the same region".....once, region is controlled, levels of autonomy are not very different among Hindus and Muslims. Women in Tamil Nadu (South India) – whether Muslim or Hindu - experience far greater autonomy than women in either Uttar Pradesh (North India) or Punjab (Pakistan).

participation rates (Table 4). When economic necessity forces women from poorer households to undertake paid outside employment they must cope with this social stigma. This produces a pronounced ‘u-curve’ in labour force participation because when households increase, they withdraw women from the working outside home as hired labour. Further, the stigma attached to working outside home also lowers the social status of young women in the marriage market.

These restrictions bar women from playing a direct role in market transactions where they need to interact with outside males, and results in a situation where control over farm operations and decision making becomes vested in the males. Within households, males dominate ‘market work’ (work on own farm, work on others’ farm and non-farm work), while women have the major share of household tasks (Fafchamps and Quisumbing, 2003).

“Men, as primary earners are perceived to be capable managers of productive resources. Women, on the other hand, are considered to be dependents without experience and not able to handle property matters and valuable physical assets. Further, particularly in South Asia, women are considered to be member of their husband’s family. Giving them control over property is akin to giving it away to her husband and his family” (Zaidi and Farooq et al, 2016: p. 46).

Table 4: Labour Force Participation Rates in Pakistan

Indicators	2012-13	2013-14	2014-15
Refined Activity (Participation) Rates (%)			
Pakistan			
Rural			
Total	49.0	49.2	49.0
Male	70.3	69.4	69.0
Female	27.3	28.9	28.8
Urban			
Total	39.7	39.0	38.7
Male	66.4	66.0	65.7
Female	10.8	10.2	10.0

Source: Pakistan Economic Survey 2017-18

These cultural norms have had precedence over Islamic religious teachings conferring inheritance and property rights to women. Even when a woman inherits land, she is generally unable to operate the land, so land is transferred to a male family member. Because of all these factors, as seen in Table 5, ownership of agricultural assets, above all

the most important asset, land, has become concentrated among males to the near total exclusion of females.⁶

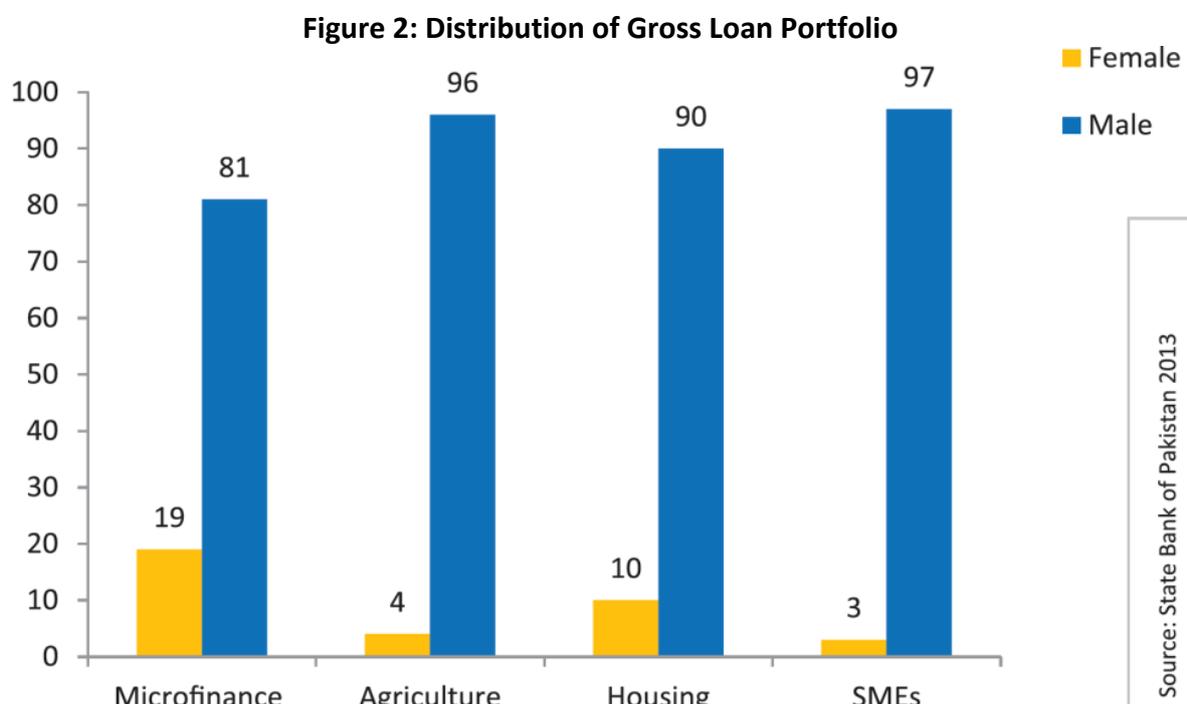
Table 5: Distribution of asset ownership in Pakistan (% owned by females)

	Alone	Jointly	Alone and Jointly
House	2.0	7.4	1.3
Land	2.0	1.8	0.1

Source: Zaidi, Y. and Farooq, S et al (2016) based on *Pakistan Demographic and Health Survey (PDHS) 2012-13*

The exclusion of females from ownership of assets also constrains their access to financial markets and borrowings, to land, machinery and other agricultural inputs, and limits their capacity to engage directly or independently in economic activities. Despite efforts to expand female access to financial markets through various schemes including: microfinance programmes, access to finance and borrowings remains male dominated (Figure 2).

In these circumstances, understandably, females have little or no power to exercise much influence on farming decisions, and more generally on household economic decisions.



⁶ There is a large literature on the complex interactions between purdah, dowry system, under-investment in female education and other forms of human capital (see, for example,

Zaidi, Y. and Farooq, S et al (2016) based on *Pakistan Demographic and Health Survey (PDHS) 2012-13*

But neither the economic nor the social environments are static.

The social restrictions and practices associated with purdah are changing in Pakistan with higher levels of female education, exposure to outside influences, and both economic necessity and new economic opportunities. This has been occurring in urban areas for quite some time (Mirza, 1999), but is also now beginning to happen in rural areas.

Higher levels of girls' school enrolments are also indicative of changing attitudes in society, and there's beginning to be greater recognition of the value of female education both in terms of higher income earning capacity and household benefits that come from having more educated females. Makin (2017), based on econometric analysis of field data from Punjab (Pakistan) concludes that enhanced outside income earning ability is becoming more valued in the marriage market, leading to lower dowry payments, and her interviews suggest that many working women believe that working outside helps them find a better marriage match. As Batool and Nosheen (2016: p.105) point out, "Men are used to markets and women with domestic work but trends in Punjab are changing with its economy strengthening and changing social norms". The changes in Punjab are paralleled by similar changes in other provinces, though the pace of change varies across different provinces and different ethnic groups.

Integration into modern value chains: impact on women

The situation of rural households in Pakistan can improve in a sustainable way only if agricultural productivity and incomes are raised through modernisation and reforms of value chains.⁷ But what will be the impact of such reforms on the position of women, and what kinds of policies and measures can help women to capture benefits from value chain development? This has generated much debate and an extensive literature on the various issues has emerged in recent years.

Market reforms can by themselves improve price transmission through the value chains and improve prices received by the primary producers. While such price improvements can contribute to improving the conditions of the producers, arguably, the most important long term impact of market reforms is that they provide an enabling environment whereby the entire production, harvesting, processing, transport and deliver of final products to consumers can be transformed into a modern value chain supplying high quality and high value products to final consumers. These do more than simply deliver farm produce to final consumers. In fact the 'middle-segments' (processing, wholesale, logistics) of agri-food value chains account for 30-40% of value added and costs and have been rapidly

⁷ We use 'value chains' rather than 'supply chains' in this paper recognising that these terms are used in the literature to look at issues from a value addition and product differentiation point of view (a consumer side perspective) in the one case, and from the supplier perspective in the other (Reardon, 2015).

modernising and transforming, undergoing major technological and institutional changes in recent years (see Reardon, 2015, for an overview and review of these developments).

In the case of horticulture, the incentives for modernisation of such value chains arises from powerful demand-side forces; rising urbanisation, higher numbers of working women, and increasing incomes (reflected in the emergence of a better educated middle class that seeks higher levels of food quality and food safety) in the country, as well as the (currently almost unexploited) potential for penetrating lucrative foreign markets, create large profit opportunities for the Pakistan horticultural industries.

But these opportunities can be realised only if producers are provided with the right incentives - higher prices for better quality production and the technologies, skills and physical equipment and facilities for better harvesting, storage and processing. International experience suggests that this kind of change and transformation typically involves the linkage of small primary producers with large modern downstream agri-business firms. This is a process where the value chains shrink in terms of the number of intermediaries, and lengthen in terms of distance as more and more products reach consumers not only within the country but also in distant foreign markets, and products move from being bulk commodities to highly differentiated (often branded) products that meet stringent standards of food quality and food safety.

Integrating small producers into such modern value chains is very challenging. In order to ensure that products meet high standards, downstream firms must be able to count on reliable suppliers who have both the ability and the incentives to achieve such standards. If mutually beneficial relationships between such firms and resource poor small farmers can be established whereby the farmers get access to better technology, resources, stable markets and higher prices, while the firms get stable supplies of quality products in return, the corporate profitability objectives, and rural development and poverty alleviation goals coincide. That such relationships, based on various institutional innovations such as contract farming and other mechanisms, are feasible and viable, is shown by the numerous examples of successful development of agricultural value chains in many developing countries, most of which are in horticultural industries (e.g. the vegetable export sector in Madagascar (Minten et al., 2009), vegetable value chains in Philippines (Concepcion, Digal and Uy, 2007), the horticultural export sectors in Kenya, Peru and Ethiopia (Humphrey et al., 2004; Schuster and Maertens, 2016; Staelens et al., 2016)).

However, there has been much concern about the distributional impacts of the penetration of modern value chains into rural communities. Any major changes in economic conditions can create both 'gainers' and 'losers' at the least in the short to medium term, and the 'losers' are typically those who lack the skills and assets that are in demand in the new circumstances, and whose bargaining power is weak. There is a huge imbalance in the bargaining power of the parties that are brought into a relationship - small resource-poor producers and large, modern agribusiness firms, often globally networked giant multinationals. The transactions costs associated with supervision of a large number of small producers, enforcement of standards and production practices, potential scale economies and required higher skill levels, modern agri-food firms often prefer to deal with larger and better endowed producers and . On the other hand, given the asymmetry in

bargaining power, and the skill and resource requirements, poorer rural farmers and households may find that they cannot benefit from such value chains.

These concerns are magnified when considering the potential implications for rural women, who are typically even more handicapped by their lower education and skill levels, restricted mobility and constrained access to markets.⁸ There has been evidence that in some cases, such as in the horticulture sector in Kenya (Dolan, 2001), rise of supermarkets in many developing countries (Reardon, Pingali and Stamoulis (2006), and in the South African fruit sector (Barrientos, Dolan and Tallontire, 2003), women have been indeed adversely affected. These concerns raised the question: “Are African horticulture value chains are bearers of gender inequality”?⁹

However, after reviewing the large literature that has developed on the distributional outcomes of modern horticultural value chains, Maertens and Swinnen (2012) paint a more mixed picture, concluding that such adverse distributional outcomes are not universal, and discuss the channels through which rural communities, including women, are affected by modern value chains. These value chains can generate benefits to rural communities in two ways, both through product markets and labour markets, with the impact and benefits depending on factors such as the extent of agro-industrialisation, the level of vertical coordination and the occurrence of market interlinking across countries and sectors. First, farm-households are affected through the production and marketing of high-value produce in contract-farming type schemes. Though it is possible that large corporates may exploit their superior bargaining power to exploit the small producers, unless producers feel that they gain from relationships with purchasers of their products, such relationships are unlikely to be viable and sustainable in the long term. Hence purchasers of farm produce have an incentive to enter into mutually beneficial production and trading arrangements, as purely one-sided relationships do not last over time. Both recent theoretical and empirical research now suggest that farmers generally gain from participation in high-value contract-farming schemes through enhanced access to inputs, reduced production and marketing risk, improved technology and productivity, and ultimately higher incomes. Second, if high-value value chains are characterised by contracting with large commercial farms or by vertically integrated estate production, or if labour-intensive post-harvesting and processing is needed, rural households gain through labour market effects; these labour market effects are particularly beneficial to the poorest households.

How would these labour market impacts affect women? The empirical experience shows that the actual outcomes are very much context-dependent and can vary even from crop to crop. Some products are more likely to enhance demand for female labour because females are considered ‘better’ for some types of operations for a variety of reasons. According to Kimenyi (2005), in Kenya females are considered to be better at harvesting beans. In Senegal, Maertens and Swinnen (2012) report that agro-industrial firms prefer to hire females because they believe that women have better capabilities for delicate harvesting

⁸ Immobile factors who are constrained from moving into the new, more profitable industries or activities typically tend to be the losers. To the extent that the poor, or females, are hampered in their occupational mobility for whatever reason and unable to switch to the more profitable sectors, they are likely to be hurt.

⁹ See the discussion in Maertens and Swinnen (2009)

and handling of fresh produce; except for harvesting mango, which involves climbing trees and for which male workers were preferred. The overall outcomes for women may not always be positive, even when there is employment of women in new value chains. Guijt and van Walsum (2008) examined the impact of 'Fair Trade' mango production and marketing in Burkina Faso and found that while some women gained from the new employment opportunities provided by the packing station, other women suffered from reduced marketing opportunities. Mangoes that women used to sell locally were now marketed internationally, but women's role in the international marketing chain appeared to be much smaller than it was in the local market.

Maertens and Swinnen (2012) summarise the findings from a large number of studies and point out a number of factors that affect the position of women following the establishment of improved marketing systems and modern value chains as follows:

1. Biases that constrain women's access to production and labour contracts
2. Even if women are included in such contracts, they may be in an inferior bargaining situation because of low education, and poorer access to information and technology and productive resources
3. If women are excluded from these production and labour contracts, they may be worse off because their work intensity, levels of drudgery and risk, on the family farm may increase when husband and/or male siblings gain these more profitable contracts
4. High value modern farming may increase the productivity and incomes of men, while relegating women to lower productivity work, thereby increasing gender inequality
5. Intra-family decision making and bargaining powers affects outcomes. While higher income from the modern farming systems may increase overall family income, women may not benefit if they are excluded from access to better income earning opportunities and they lack decision making power over incomes within the household. On the other hand, if women do gain access to the more remunerative income earning opportunities, they will not only gain from higher household incomes, but also gain greater within-household bargaining power and control over decision making.

These factors provide a useful checklist of questions to ask and investigate when conducting analysis of the effects of specific market reforms and their consequences,. They also provide some guidance into how pro-women policies and measures can be formulated and implemented in specific socio-cultural contexts. In the next section we briefly discuss the experience of the case of a modern value chain in the dairy sector of Pakistan, the Nestle Dairy project, and consider what lessons can be drawn for gender outcomes if market reforms lead to significant development of modern value chains in horticulture.

Modernising dairy value chains: the Nestle experience

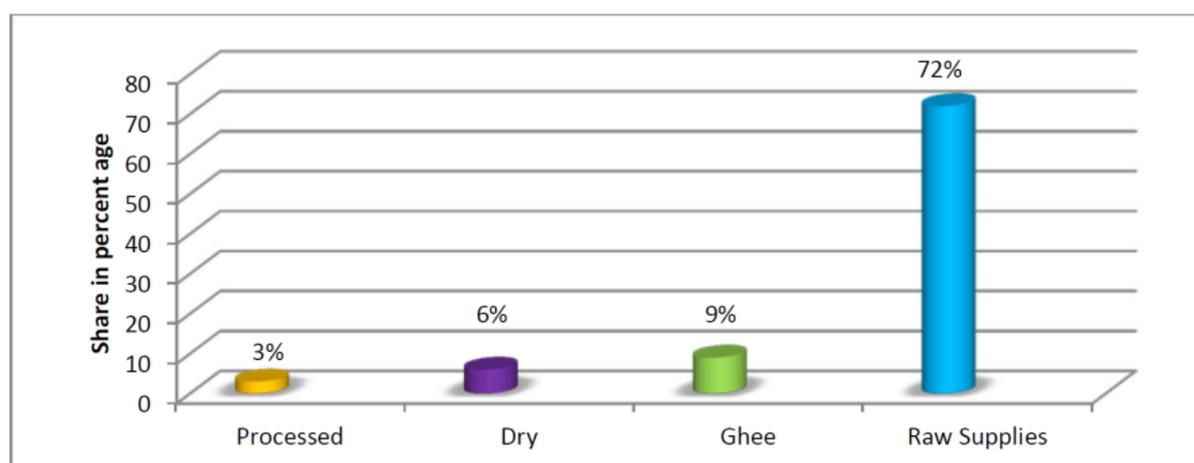
There are many similarities as well as important differences between the markets for dairy and horticultural products. Urbanisation and higher incomes are rapidly increasing the demand for both these products, and the international market also offers export opportunities if required quality standards can be met. Pakistan is not only a large producer

of horticulture products but also one of the world's largest dairy producers, but not only has it been unable to develop expiry markets, it has even been unable to meet increasing domestic demand.¹⁰

Milk producers are typically small farmers, with small herd sizes (over 80% of producers have herd size below 4 animals) and few resources. Production and processing technologies are primitive, mechanisation almost non-existent, milk yields are low (reflecting the poor quality of breeding stock - two thirds of the milk come from very low yielding buffalos – the low quality of feed and poor animal health), marketing chains are long and inefficient, wastage and other losses are high, the quality of product provided to consumers is low, and adulteration and contamination are pervasive.

Only a small fraction of total milk production is processed and marketed through large scale modern processing ('formal') channels (Figure 3). A high proportion (60%) is consumed by farm households, and the remainder sold. Though some farmers carry their milk to urban centres on bicycles or motor cycles, a large proportion of milk is sold through intermediaries (*Dodhis*). The smaller *Dodhis* collect small amounts of milk from farmers at farm gate, middle sized *Dodhis* collect from small *Dodhis* and sell to large *Dodhis*. They transport milk over long distances, often in extreme weather conditions. An Asian Development Bank (ADB) report (Malik and Luijkx, 2004), estimated milk losses due to the lack of cold storage at about 15 to 20 percent of total milk production in some areas. During the summer *Dodhis* add ice (often made with dirty water) as well as bacterial inhibitors, such as penicillin and other harmful chemicals, to the milk to prevent spoilage, and other adulterants (such as washing powder and maize flour) to enhance volume and whiteness (Zia, Mahmood and Ali, 2011).

Figure 3: Shares of processed and raw dairy products



Source: Aslam (2012)

¹⁰ Instead it has been importing increasing quantities of dairy products, particularly powdered milk, which is used by many milk processing plants to produce UHT milk which has a longer shelf life, and is in greater demand as consumers become more conscious of food safety issues.

The increasing domestic demand for better processed, safe and hygienic milk has created a market opportunity that has attracted not only domestic but also large multinational firms into the Pakistan dairy sector (such as the Swiss firm Nestle, and the Dutch firm FrieslandCampina, which purchased a controlling interest in a local firm Engro Foods).

But all firms that are willing to invest in the storage facilities and processing plants to produce better quality dairy products face the problem of procuring stable supplies of uncontaminated good quality fresh milk on a commercially viable scale. In principle they can (a) buy from Dodhis, (b) assist existing farmers with technology, capital and skills to produce and deliver quality milk and source fresh milk directly from them (the contract farming model – ‘Dairy Hub’), or (c) they can establish vertically integrated dairy production systems by establishing their own large scale modern dairy farms.

In Pakistan firms have been adopting all these models, and often a combination of them. Engro Foods “has made better connectivity with large dairy farms to improve milk supply and also help them to adopt better farm management practices. The company has also established corporate dairy farming in the private sector which ensures timely supply of quality milk for processing and producing other dairy products. Some other big farmers such as Sapphire Dairies, Dada Dairies, Al-Tahur Dairies, Sharif Dairies etc, have already integrated their supply chains by establishing commercial farms” (Zia, Mahmood and Ali, 2011: 17).

Nestle, however, having invested in establishing its largest dairy product factory in Kabirwala, Punjab, opted to source most milk directly from farmers, and claims to have achieved excellent results not only in raising the quantity and quality of milk, farm income and average herd size, but also in improving the position of women in small dairy farming households. This success is attributed to the way they developed their milk sourcing strategy based on the ‘Creating Shared Value’ (CSV) approach.

According to Niels Christiansen (2014), who claims to have coined the term CSV in 2005 when he was Vice Chairman of Public Affairs at Nestle, it “simply means that in making business decisions on future plans and investments, Companies simultaneously consider what long-term value can be created both for society and for shareholders. This requires a long-term business perspective and is based on the assumption that chances for sustainable business success are increased when a company, as appropriate within the business strategy, invests in social aspects that improve business conditions. CSV also implies a process wherein a company assesses its value chain and identifies those primary points of intersection between the company and society where social investments can improve the chances of business success” (p 354).

CSV is now accepted as a business strategy that in some circumstances can reconcile business profitability goals with wider social and community goals, particularly after Michael Porter popularised it (see Porter and Kramer, 2011). In principle it can be thought of as a strategy where a firm steps in to provide some types of quasi-public goods in environments where market failures are pervasive and governments are weak or ineffective. The success of such strategies, that can encompass a range of different approaches including various

forms of contract farming, naturally depends on the extent to which contracts between the firm and suppliers from target communities are incentive compatible and sustainable.

A modern firm faces huge challenges when it plans to source stable supplies of an input of consistently high quality from small farmers who lack skills, training, capital, and other resources, and are un-accustomed to the demands and requirements of a modern value chain. Christiansen (2014: 355) details the measures Nestle has adopted to overcome these challenges, stressing the need for the firm to have a long term planning horizon: “First, it requires a willingness to assume long-term risk and strong financial management to permit making major investments that may not pay off for 10 years. This is particularly true when entering areas that are populated by the marginalized poor and that lack the basic infrastructure, educated work force, communications, and reliable business suppliers necessary to serve the company’s manufacturing or raw material needs. Second, it requires an understanding of what will benefit society in the long term, and where those potential benefits intersect with a company’s business interests. Third, it requires a planning process and mindset that translates the interests of shareholders and the interests of society into concrete business plans. Fourth, this approach requires patience and persistence aligned to a common value set and continuity in personnel, as well as not being dependent on that significant segment of the investor community that only pursues short-term results (for example Nestlé S. A. refuses to be listed on any stock exchange that requires reporting of quarterly results).”

The company adopted a multi-pronged approach through their Milk Collection and Dairy Development (MCDD) programme where they established milk collection centres in villages, provided training, assistance and advice, and various inputs to farmers to improve farm practices, and upgrade the quality of herds, to improve the quantity and quality of milk production on small farms.¹¹ They have also helped to increase the supply better animal feed, both directly (for example, by demonstrating how to make silages) and indirectly by working with feed suppliers. According to company sources, in 2014, they also developed the capacity of 27 animal feed manufacturers in Punjab to produce cost effective, nutritious and compliant cattle-feed solutions in the shape of feed concentrate and cotton seed pellets; in 2014, more than 540,000 such feed bags were delivered to farmers.

From a gender perspective, a major aspect of Nestle’s CSV program was the involvement of women. This strategy of targeting rural women – who have been traditionally bypassed in much agricultural extension and development activities – and actively implementing measures to integrate them into their supply chain was based on the above mentioned long term planning perspective. Nestle recognised that involving women was crucial to the success of the programme because women play an instrumental role in managing small animal herds, accounting for around 84 percent of labour inputs. As Christiansen (2014: 362) noted, “While it is almost always the women that take care of the dairy cattle, they do not have access to knowledge about animal husbandry due to cultural barriers, as nearly all of the veterinarians are men”.

¹¹ See, <https://www.nestle.pk/csv/ruraldevelopment/milk-collection-dairy-development>.

To address this issue, Nestle launched a programme to train female livestock workers with the aim of developing women who possessed skills in animal husbandry and dairy farming, and who could return to their villages and share their expertise with other local women. They are given basic training in livestock management and provided with instructional materials and a veterinary kit to use in their villages that includes medical instruments, medicines and vaccines. A woman veterinarian heads this training program and her knowledge about animal care is transferred first to the trainees in the program, and then to the village women who receive (and pay a nominal fee for) the advice given by the trainees. Through this programme, over 5,000 women have been trained in basic animal husbandry and livestock management to provide extension services in more than 3,000 villages.¹² They also serve as a conduit for microfinance efforts, and complement Nestle's "Women Agriprenure" initiative.

Nestle claims that this investment in training and involving women has been not only critical to their success in attaining the improvements in all aspects of animal health and hygiene and establishing a reliable and stable supply of raw milk from small producers, but has also led to significant increases in farm incomes and overall wellbeing of participating farming communities. Thus the involvement of females has been a calculated decision that fits into the corporate profit goals of the company as a component of the CSV strategy, where because it is a "part of a business plan and is tied to the long-term enhancement of corporate profit, it will endure over time because its financial support is not tied to the largesse of the company, but to a self-sustaining financial model. The potential for scaling up this strategy is therefore also greatly enhanced because it is a part of core business activities rather than something that is an additional activity to the main business."¹³

How much actual impact on women's situation?

The most important lesson from the Nestle experience for enhancing the position of women when developing modern horticultural value chains that seems to come through is that the socio-cultural barriers that constrain rural females in Pakistan from participating in modern value chains can be overcome, at least in certain situations. In the case of dairy, Nestle recognised the traditionally important role of women in dairy management at the household level, and the necessity to impart skills and knowledge to those women to improve the quality and quantity of milk. They devised a strategy that was socio-culturally acceptable to approach and work with those women, by employing and training females who could then serve as the company agents in approaching the women in the dairy households who did not themselves have to travel outside their homes or villages.

Nestle claims that their strategy not only served to enhance productivity and helped them establish a stable supply chain for milk for the company, but also improved the position of women in the household because the women with their improved skills and knowledge and enhanced role in the dairy management are now more empowered in general within the households. Unfortunately no rigorously conducted large scale studies are available to substantiate all the claims of positive outcomes that are made by the company. Further

¹² <https://www.nestle.pk/csv/ruraldevelopment/nestl--drdf-dairy-project>

¹³ Christiansen (2014): 356

research is needed to understand the overall impact of the Nestle operations on the position of women in the dairy households, including the extent to which farming women who have gained training and skills have benefitted from the higher productivity of dairy animals and better prices obtained from Nestle collection centres. To what extent have they gained direct access to revenues from milk sales? Has the workload of women gone up because of their newly acquired skills? What has been the impact on intra-household dynamics, and the bargaining power of women within the household? To what extent have they enhanced their capacity to influence household expenditures? Is there any bias in program participation towards richer, larger or better educated households? ¹⁴

To explore these issues, we undertook a case study to explore the impact of the Nestle projects in two villages, Chak Marly and Chak 45, in District Pak Pattan, Punjab. We adopted a mixed approach, combining interviews of a selected sample of households, including both participants of the Nestle project and non-participants (using both a small structured questionnaire and several open ended questions designed to prompt discussion) as well as intensive discussions with key informants, including many women. We surveyed 50 non-Nestle participant households and 42 Nestle participants in total, of whom 50% were females. Neither the sample size nor the method of selection of the village or the interviewees permits any valid generalisations of our observations. The village, while it can be considered a fairly typical village, was chosen primarily because one of us (Afzal) had good contacts in the village, so that culturally sensitive questions (such as those on decision making within the household) could be asked with the expectation of eliciting reasonably reliable responses. The smaller number of Nestle participant households reflected the fact that only a minority of households in the villages were participants and it was not possible to get a larger sample with responsive respondents. ¹⁵

The results summarised in the Tables 1-10 in the Appendix suggest that Nestle participants came from largely from better educated households, with higher incomes, larger herds and milk volumes. (Note that we do not report statistical tests of significance for differences because they would have no validity given the sample selection method.)

In terms of gender roles, there appeared to be no significant differences between participants and non-participants in terms market transactions. In both cases it was males who mostly bought and sold cattle, while females did most of work in finding fodder, cleaning sheds, and doing the milking (with some involvement of servants in the higher income households). The one significant difference was that females in participant households had a bigger role in animal health, consistent with females having had training in animal health through Nestle.

¹⁴ Though we were restricted to a case study of two villages, given the budget and time constraints, we believe that these are fairly typical of many villages where Nestle operates, and that these results give a reasonably general picture.

¹⁵ Often surveys are carefully designed, samples selected with statistically accepted criteria, detailed questionnaires are developed asking culturally sensitive questions, and responses recorded, analysed, and reported, and general conclusions are drawn. Unfortunately the responses obtained have only spurious accuracy; often they can be downright misleading.

This may have some impact on the role of women in household decision making; though in the response to question of who makes decisions in the household, a smaller proportion among participants stated that only a female makes the decision, in such households a much larger proportion said that 'both' males and females jointly make the decisions. Taking into account the fact that when females have a more important role respondents are more likely to say 'both' (rather than 'females alone' because of cultural norms, we lean towards concluding that females have a bigger role in participant households. This is encouraging in that the skill enhancement of women who get training in animal health may subtly change the intra-household relationships enabling the women to exercise a stronger role in decision making.

Conclusions

Integrating rural producers into modern value chains to enhance productivity, and linking them to distant markets and deliver better quality products is a potential avenue for improving the conditions of rural women. Well-designed market reforms can facilitate improved price transmission and incentivise modern firms to invest in direct links to small producers.

Many factors influence the distribution of benefits including access to resources, skills, and knowledge. International experience shows that rural females gain most through labour market (employment) effects that are large when modern value chains generate large increases in production and processing. Typically this happens when modernised value chains enable penetration of large external markets (i.e. export markets) and/or through expanding domestic markets associated with increasing income and urbanisation. They also contribute to expansion of markets for quality differentiated (and also often more highly processed) products.

This is a major opportunity but also a big challenge in Pakistan, where females make a large contribution, particularly in terms of their labour, into most agriculture industries. Indeed, according to the Pakistan Economic Survey 2018-19, more than two thirds of the women in the formal labour force are employed in agriculture. But they confront socio-cultural barriers that continue to significantly constrain their access to resources, education and skill acquisition, markets, and occupational mobility. Even when a modern corporation reaches out to involve women in a modern value chain, female participation is restricted to specific tasks and their direct access to marketing and incomes are quite restricted. This is clearly shown in the case study data from the diary sector, though (encouragingly) there is a suggestion from our study that females become more empowered as they acquire greater farming skills.

As in the dairy sector, there is almost no involvement of females in the post-farm value chain of any of the main agricultural or horticultural crops. But if market reforms attract modern value chains that place a strong premium on quality, and require improved on-farm processing (e.g. improvements in chilli drying methods), innovative firms may see the potential for greater profits from greater involvement of women. They will see the benefits of providing them with knowledge, skills and inputs. But modern processing requiring factory-based activities will find it hard to tap the rural female labour pool in the foreseeable future.

Though socio-cultural norms are changing in Pakistan, including in rural areas, they cannot be changed quickly or easily through changes in policies and regulatory reforms alone. Policies to improve the position of rural women, including policy and institutional reforms in horticultural markets, must take into account this socio-cultural reality. In the foreseeable future, females' access to cash revenues through market transactions involving 'outsiders' is likely remain restricted. Their ability to work in factory settings will also be limited, thereby lowering the capacity for Pakistan to exploit its competitive strengths in horticultural production. This will remain an obstacle to the development of modern, dynamic, horticultural industries that can supply the growing consumer demands at home and also penetrate the high value export markets.

But the Nestle dairy project experience suggests that private firms can involve more rural females in modern value chains if they implement innovative approaches tailored to the specific socio-cultural circumstances of Pakistani rural situation. Though a rapid transformation does not seem likely, experience in other countries such as Bangladesh and Indonesia suggest that change is possible when economic incentives are enhanced. Every small step towards greater female involvement will be a positive step towards modernisation and development of the horticultural sector, and more broadly, the entire rural sector.

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Appendix

Nestle participants vs Non-Participants: results from sample survey

1. Education

Table 1.1: Respondent's Education

	Non-Participants		Nestle Participants	
	No of Households	%	No of Households	%
Illiterate	25	50.0	18	42.9
Primary	8	16.0	0	0
Middle	10	20.0	3	7.1
Metric	5	10.0	6	14.3
Graduation	2	4.0	15	35.7
Total	50	100.0	42	100.0

Table 1.2: Household Head education

	Non-Participants		Nestle Participants	
	No of Households	%	No of Households	%
Primary/Illiterate	38	76.0	15	35.7
Middle	5	10.0	9	21.4
Metric	5	10.0	6	14.3

Graduation	1	2.0	12	28.6
Total	50	100.0	42	100.0

Table 2: Household income (PKR per month)

Income	Non-Participants		Nestle Participants	
	No of Households	%	No of Households	%
<10000	26	52.0	9	21.4
10000-25000	17	34.0	18	42.9
25001-50000	4	8.0	9	21.4
50001-100000	1	2.0	3	7.1
>100,000	2	4.0	3	7.1
Total	50	100.0	42	100

Table 3: Revenue from milk sales (PKR per month)

Income	Non-Participants		Nestle Participants	
	No of Households	%	No of Households	%

<10000	13	26.0	0	0
10000-25000	19	38.0	4	9.5
25001-50000	14	28.0	18	42.9
51001-100000	2	4.0	18	42.9
>100000	2	4.0	2	4.7
Total	50	100.0	42	100.0

Table 3: Size of Herd

Number	Non-Participants		Nestle Participants	
	%	No of Households	%	No of Households
1-3	27	54.0	3	7.1
4-8	15	30.0	24	57.1
9-15	4	8.0	3	7.1
16-30	4	8.0	9	21.4
>30	0	0	3	7.1
Total	50	100.0	42	100.0

Table 4: Number of Active milk animals

	Non-Nestle		Nestle	
Number	Frequency	Percent	Frequency	Percent
1-3	32	64.0	12	28.6
4-8	13	26.0	18	42.9
9-15	3	6.0	6	14.3
16-30	2	4.0	2	4.7
>30	0	0	4	9.5
Total	50	100.0	42	100.0

Table 5: Daily milk production (Litres)

	Non-Participants		Nestle Participants	
Litres	%	No of Households	%	No of Households
1-10	14	28.0	0	0
11-20	22	44.0	6	14.3
21-40	9	18.0	12	28.6
41-60	3	6.0	12	28.6
61-100	2	4.0	3	7.1
>100			9	21.4
Total	50	100.0	42	100.0

Table 6: Daily milk sales (litres)

	Non-Participants		Nestle Participants	
Liters	No of Households	%	No of Households	%
1-10	12	24.0	3	7.1
11-20	24	48.0	3	7.1
21-40	9	18.0	15	35.7
41-60	3	6.0	9	21.4
61-100	2	4.0	3	7.1
>100	0	0	9	21.4
Total	50	100.0	42	100.0

Gender roles

Table 7: Who buys and sells farm animals

	Non-Participants		Nestle Participants	
Gender	No of Households	%	No of Households	%
Female	16	32.0	12	28.6
Male	32	64.0	30	71.4
Both	2	4.0	0	0.0
Total	50	100.0	0	0.0

Table 8: Who finds fodder for animals

	Non-Participants		Nestle Participants	
Gender	No of Households	%	Gender	No of Households
Female	25	50.0	21	50.0
Male	11	22.0	6	14.3
Both	11	22.0	9	21.4
Servants	3	6.0	6	14.3
Total	50	100.0	42	100.0

Table 9: Who cleans the animal sheds

	Non-Participants		Nestle Participants	
Gender	No of Households	%	Gender	No of Households
Female	42	84.0	33	78.6
Male	1	2.0	3	7.1
Both	4	8.0	0	0.0
Servants	3	6.0	6	14.3
Total	50	100.0	42	100.0

Table 10: Who looks after animal health

	Non-Participants		Nestle Participants	
Gender	No of Households	%	Gender	No of Households
Female	11	22.0	21	50.0
Male	30	60.0	15	35.7
Both	8	16.0	3	7.1
Servants	1	2.0	3	7.1
Total	50	100.0	42	100.0

Table 11: Who does the milking?

Gender	Non-Participants		Nestle Participants	
	No of Households	%	No of Households	%
Female	36	72.0	24	57.1
Male	8	16.0	6	14.3
Both	3	6.0	6	14.3
Servants	3	6.0	6	14.3
Total	50	100.0	42	100.0

Table 12: Who makes household spending decisions

Gender	Non-Participants		Nestle Participants	
	No of Households	%	No of Households	%
Female	19	38.0	12	28.6
Male	30	60.0	18	42.9
Both	1	2.0	12	28.6
Total	50	100.0	42	100.0