

**Oxfam America**  
Research Backgrounders

# **Impact of garment and textile trade preferences on livelihoods in Cambodia**

Sophal Chan and Sothea Oum

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## Citations of this paper

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# Introduction

Cambodia's major exports are garments and textiles, and the US is by far Cambodia's largest export market, absorbing 70 percent of the garments and textiles produced in Cambodia. Cambodia, considered a least-developed country (LDC), is eligible for US trade preferences under the generalized system of preferences (GSP). However, the US code prohibits the use of trade preferences for "most textiles, watches, footwear, handbags, luggage, flat goods, work globes, and other leather apparel,"<sup>1</sup> – in other words, nearly all the products that Cambodia exports to the US. In 2006, the US Government Accountability Office (GAO) reported that for all Cambodian exports to the US, only 0.2 percent, by value, utilized preferences.

Over the course of 2009, US demand for clothing has dropped, and Cambodia's exports to the US fell approximately 16 percent in 2009 alone.<sup>2</sup> Since the onset of the global financial crisis in the last quarter of 2008, reduced trade with the US and other partners has resulted in the loss of an estimated 63,000 garment factory jobs, jobs primarily held by women from poor rural areas. Massive factory closings and layoffs have negatively affected Cambodia's growth trajectory and threaten to unravel the advances toward poverty reduction achieved over the past decade. Rural families, primarily subsistence rice farmers who rely heavily on remittances from their daughters working in Phnom Penh garment factories, are also now struggling to make ends meet.<sup>3</sup> The Cambodian government swiftly took both fiscal and monetary measures to mitigate the impact of the global economic downturn. This includes reducing the bank reserve ratio from 16 to 12 percent and lifting the 15-percent cap on real estate lending for monetary easing. In fiscal terms, among other things, the Cambodian government suspended the 1 percent turnover tax for garment producers and extended the tax holiday for them.<sup>4</sup> Duty-free and quota-free (DFQF) access to US markets could significantly enhance growth in the Cambodian garment sector, which in turn would reduce both urban and rural poverty by improving the livelihoods of garment workers and their families.

In this study we review the recent performance and structure of the Cambodian economy, particularly its apparel sector and how the sector has developed

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1. *US Generalized System of Preferences (GSP) Guidebook* (Washington, DC: Office of the US Trade Representative, 2010), 19 USC 2463.
  2. Chhun Naron Hang, "Macroeconomic Development in 2009" (presentation at the Annual Conference of the Cambodian Economic Association, Phnom Penh, 2010).
  3. Sothath Ngo and Sophal Chan, "The Impact of the Economic Downturn on Households and Communities in Cambodia" (Phnom Penh: Cambodian Economic Association, 2010), xi, 25.
  4. UN Cambodia Country Team, *The Global Economic Downturn: Opportunity or Crisis?*

(including the extent of vertical integration, diversification of products, and dependency on foreign investment) over the past two decades. We also analyze how the Cambodian garment sector has performed in the global economic downturn, examine the importance of the US market to this sector, and assesses the impact of the sector's potential growth on employment and poverty reduction using an input-output model.

# Overview of the Cambodian economy

This section provides an overview of the Cambodian economy, especially its evolution over the past 10 years (2000–2009), as a foundation for the argument that the garment industry plays a significant role in poverty reduction in Cambodia and thus its continued growth is important. Sources of growth in this industry over the past decade will be discussed, with attention to how growth can be sustained despite the recent global economic downturn that has had a tremendously detrimental effect on Cambodia. Impacts of growth, employment, poverty reduction, and human development will be also examined.

Cambodia recorded per capita gross domestic product (GDP) of \$651<sup>5</sup> in 2008 and a poverty rate of 30 percent in 2007; the country is defined as a least-developed country and is one of the poorest in the region. Figure 1 shows that economically Cambodia lags behind neighboring Vietnam, which had the same level of per capita GDP in 1993, and far behind China, which also recorded a similar GDP in 1993. Among Cambodia's neighbors, Thailand and Malaysia achieved higher economic growth for decades while Cambodia was plunged into a devastating civil war from the 1970s until 1993.<sup>6</sup> It is projected that Cambodia needs to grow by at least 7 percent per year on average in order to move out of the World Bank International Development Assistance (IDA) threshold in the next decade.<sup>7</sup> It is therefore important that the Cambodian economy continues to achieve strong growth, particularly in the garment sector.

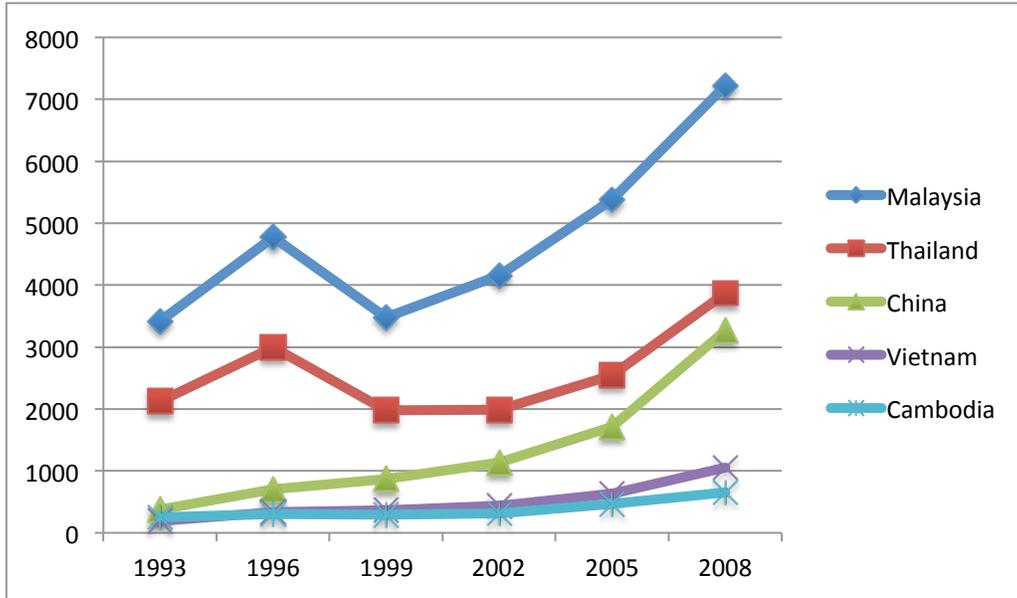
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5. Throughout the paper, all dollar figures are US dollars.

6. In fact, despite the United Nations–run elections in 1993 resulting in a new constitution and government, Cambodia did not fully achieve peace until 1998, when the last stronghold of the Khmer Rouge forces were integrated into the government.

7. John Nelmes, “Global Crisis—Impact, Outlook and Policy Options for Cambodia” (presentation at the Cambodia Outlook Conference, organized by the Cambodia Development Resource Institute, Phnom Penh, March 12, 2009).

**Figure 1. Cambodia's GDP per capita in comparison with neighbors (US dollars, at current prices)**



Source: Graph created by the authors using World Development Indicators, World Bank.

## Performance of the Cambodian economy over the past decade

Cambodia achieved impressive economic growth and significant poverty reduction over the past decade just before it was hit by the global economic downturn in late 2008–2009. The average annual growth preceding the downturn had been 9.3 percent over the decade. The highest growth was recorded in 2005 at 13.3 percent. However, growth contracted to 6.7 percent in 2008 and to 0.1 percent in 2009. As far as poverty estimates are concerned, figures are only available for 1993, 1994, 2004, and 2007. The poverty rate was 47 percent in 1993/94, 35 percent in 2004, and 30 percent in 2007.<sup>8</sup> Poverty reduction remains the overarching goal underscoring many of the objectives of the Cambodian government, its development partners, and nongovernmental organizations (NGOs) involved in the country.

The impressive economic growth over the past decade followed the full-fledged peace achieved in 1998. In cooperation with numerous development partners, the Royal Government of Cambodia (RGC) maintained macroeconomic stability (i.e., avoided high inflation, high unemployment, and serious income decline), which

8. World Bank, "Sharing Growth: Equity and Development in Cambodia" Equity Report (Washington, DC: World Bank, 2007).

allowed the private sector to grow. Cambodia's high economic growth has relied on four sectors: garments and textiles, tourism, construction, and agriculture.<sup>9</sup> Expansion of the garment industry began in 1998, while significant and consistent agricultural growth has been achieved only since 2005.

**The garment industry** grew by more than two digits almost every year from 1998 until 2008 when it slowed sharply to growth of just 2.2 percent (Table 1). As discussed later in this study, industry growth was supported by favorable access to garment export markets, conferred by the most favored nations (MFN) and GSP status granted by the US in 1997, following that granted by the European Union (EU) in 1996. The US market absorbed approximately 70 percent of the total garments and textile exports from Cambodia, the bulk of the rest going to the EU, Canada, and Japan. At its peak in late 2008, the garment industry counted approximately 350,000 employees, mostly young females from rural villages, working in nearly 300 factories. The impact of the global financial crisis began to be felt in Cambodia in the last quarter of 2008, and the garments and textile sector registered a 9.0 percent decrease from the previous year.

**Table 1. GDP growth in Cambodia by economic activity (at constant prices)**

Sources of growth	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009*
<b>AGRICULTURE, FISHERIES &amp; FORESTRY</b>	-0.4%	3.6%	-2.5%	10.5%	-0.9%	15.7%	5.5%	5.0%	5.7%	5.4%
<b>INDUSTRY</b>	<b>31.2%</b>	<b>11.2%</b>	<b>17.1%</b>	<b>12.0%</b>	<b>16.6%</b>	<b>12.7%</b>	<b>18.3%</b>	<b>8.4%</b>	<b>4.0%</b>	-9.6%
Textile, wearing apparel & footwear	68.2%	28.4%	21.4%	16.8%	24.9%	9.2%	20.4%	10.0%	2.2%	-9.0%
Construction	36.8%	-1.8%	27.1%	11.1%	13.2%	22.1%	20.0%	6.7%	5.8%	5.0%
<b>SERVICES (Including tourism)</b>	<b>8.9%</b>	<b>10.8%</b>	<b>7.6%</b>	<b>5.9%</b>	<b>13.2%</b>	<b>13.1%</b>	<b>10.1%</b>	<b>10.1%</b>	<b>9.0%</b>	2.3%
<b>Taxes on products less subsidies</b>	<b>4.5%</b>	<b>2.5%</b>	<b>12.6%</b>	<b>0.6%</b>	<b>27.6%</b>	<b>6.1%</b>	<b>7.6%</b>	<b>45.7%</b>	<b>9.1%</b>	..
<b>GROSS DOMESTIC PRODUCT (GDP)</b>	<b>8.8%</b>	<b>8.0%</b>	<b>6.5%</b>	<b>8.5%</b>	<b>10.3%</b>	<b>13.3%</b>	<b>10.8%</b>	<b>10.2%</b>	<b>6.7%</b>	0.1%

Source: National Institute of Statistics, Cambodia.

9. UN Cambodia Country Team, *The Global Economic Downturn: Opportunity or Crisis?* (2009).

Source for 2009 data: Chuon Naron Hang, "Macroeconomic Development in 2009" (presentation at the Annual Conference of the Cambodian Economic Association, Phnom Penh, 2010). National accounts for 2009 were not finalized and published at the time of writing.

Along with garments, **tourism** is a major driver of Cambodia's economic growth, owing mainly to the abundance of ancient temples such as Angkor Wat. Contributing approximately 13 percent of GDP, the sector earned \$1.6 billion in 2008. Cambodia's tourism sector has been negatively affected by the global economic downturn, and it is also vulnerable to outbreaks of diseases, such as influenza A, avian influenza, and SARS, as well as to political instability in Bangkok, a major transit for tourists traveling to Cambodia. It is believed that Cambodia can realize its potential to attract more tourists in the future but it needs sizable capital to invest in tourism infrastructure and services.<sup>10</sup>

**Construction** is another sector that has grown above two digits over most of the past 10 years (Table 1), although it started from a low base and experienced more fluctuations than the garment sector. Foreign capital has contributed to growth in this sector in the form of foreign direct investment (FDI), evidenced in hotel construction and in real estate in 2005-2007. Starting in 2005, Cambodia received large investments from Korea and China, bubbling the construction, real estate, and land markets. These market bubbles burst in late 2008, slowing growth in the sector substantially. The government estimate of growth of 5 percent in 2009 was very doubtful. It turned out to be 0.1 percent as estimated by the government, while the other institutions reported -1 to -2.7 percent.

**Agriculture** has always been the backbone of rural Cambodia but has registered significant and persistent growth only since 2005, following that year's 44 percent increase in rice production (the result of good rainfall that season). With other crops also expanding, although at the expense of forests or degraded forests, the agricultural sector has continued to grow by approximately 5 percent per annum. It was the only sector that still grew by 5.4 percent in 2009, when the other sectors all declined, stagnated, or slowed. There appears to be ample potential for the sector to grow further, with room for improvement in yield, farm size, and value addition from processing.

## Structural change in the Cambodian economy

The Cambodian economy's structure has changed over the past decade: agriculture's share has declined, and the industrial sector has experienced higher growth. The contribution of agriculture to GDP in terms of value added fell

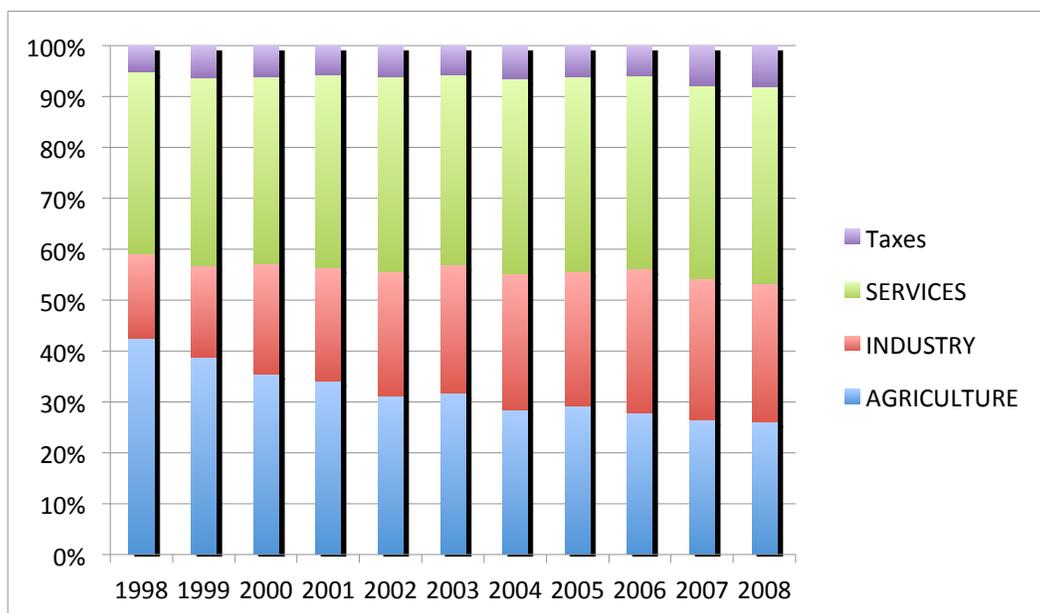
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10. UN Development Programme, "Cambodia Country Competitiveness Driving Economic Growth and Poverty Reduction" *Insights for Action Discussion Paper No. 7* (2009).

steadily from 43 percent in 1998 to 27 percent (with taxes less subsidies counted) in 2008 (Figure 2). The share of the total employment in the agriculture sector declined from 75 percent to 56 percent in the same period. Industrial sector GDP rose from 17 percent in 1998 to 28 percent in 2008, while its employment share increased from 7 percent to 15 percent. The corresponding figures for the services sector are 36 percent and 39 percent, pushing the employment share up from 24 percent to 29 percent. These figures suggest a shift of employment from a traditional sector, mainly agriculture, to a modern sector, industry and services, which is a typical path for developing economies.

The difference in the structural change is essentially the relative expansion in the industry sector. The growth in garments and construction has been responsible for this expansion. As a country develops, the relative contribution from agriculture is expected to decline, while that of the industry and services is expected to increase. While the industry sector, including construction, still accounts for less than 30 percent of Cambodia’s GDP, Cambodia has a much smaller base for nonagriculture sectors compared with neighboring countries such as Vietnam, Thailand, Malaysia, and China.

**Figure 2. Structural change of the Cambodian economy (percentage change of GDP composition at constant prices)**



Source: Graph created by the authors using statistics produced by the National Institute of Statistics in Cambodia.

## Brief overview of basic indicators for development

After a few decades of civil war, Cambodia emerged as a least-developed country striving to grow economically and reduce poverty with substantial assistance provided by development partners. GDP per capita increased from \$250 in 1993 to \$651 in 2008, while poverty declined from 47 percent in 1993 to 30 percent in 2007. Poverty in Cambodia is essentially rural poverty: 90 percent of the poor reside in rural areas that lack employment opportunities,<sup>11</sup> and as many as 200,000 workers from rural areas migrate to work in Thailand, Malaysia, and South Korea.<sup>12</sup>

School enrollment and health status have improved markedly over the past decade. Net enrollment in primary schools and secondary schools, as well as transition rates from primary to lower-secondary level, and from lower-secondary to upper-secondary level, have shown improvement. Gross enrollment ratio at the primary level increased from 87 percent in 1998 to 122 percent in 2008, while the corresponding figures for net enrollment ratio from 79 percent to 92 percent.<sup>13</sup> The growth in girls' enrollment in primary schools continues to outstrip that of boys (girls' enrollment increased by 27 percent and boys' enrollment by 22 percent since 1999), reducing the enrollment gender gap. However, more attention to the quality of education is necessary. Dropout and repetition rates have been high, and pupil-teacher ratios are also high. The statistics for dropout and repetition rates likely reflect the country's high level of poverty, which forces families to rely on child labor.

Significant progress has been achieved in the health sector in terms of provisioning public health care services and reducing HIV/AIDS. However, there is still a long way to go to reach satisfactory levels of health status, particularly in regard to reducing maternal mortality, which is high at 435 per 100,000, and infant mortality rates, currently at 75 per 1,000. The total number of health centers with capacity to provide a minimum package of activities increased dramatically in the past decade. The success of disease control measures is demonstrated by the increase in cure/detection of tuberculosis; the decrease in incidence and fatality rate of malaria, dengue fever, measles, and cholera; and the eradication of poliomyelitis in 2000.

Despite this significant progress, Cambodia remains one of the lowest-income countries and one of the poorest of the Southeast Asian nations as well as of the world. As discussed earlier, the success of the garment industry shifted

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11. World Bank, "Halving Poverty by 2015?": Cambodia Poverty Assessment (2006).

12. Sophal Chan, "Costs and Benefits of Cross-Border Labour Migration in the GMS: Cambodia Country Case" (Cambodia Development Resource Institute Working Paper 44, 2009).

13. Hang, "Macroeconomic Development in 2009."

approximately 300,000 workers from rural to urban areas where the garment factories are located. However, the wages offered by this industry remain low, averaging approximately \$80 per month. Although most garment workers manage to save roughly \$20 per month to aid their families in the rural areas, to do so they live frugally (for example, sharing a small rented room with three others and eating very little).<sup>14</sup>

Only 20 percent of the workforce is salaried, an indication of the overwhelming size of the informal sector. As much as 97 percent of firms are micro or small, employing fewer than 10 people. Unemployment, defined in a strict sense as having not worked for more than one hour in the past week, is unsurprisingly low, approximately 4 percent, but not very relevant. Most people in the labor force have to do something to make a living. The problem is underemployment – a lack of full-time employment and income.

## Impact of the global economic downturn on the Cambodian economy

The impact of the global economic crisis began to be felt in Cambodia in the fourth quarter of 2008. A narrow economic base that relied on external factors (garment exports, tourism, and FDI-funded construction) and a lack of diversification left Cambodia in a vulnerable position to external shocks. Several studies had pointed out this weakness in the Cambodian economy.<sup>15</sup> With US demand for garments and the global tourism industry in decline, the Cambodian economy received substantially less revenues and laid off as many as 63,000 workers.<sup>16</sup>

Cambodia's exports are overwhelmingly dominated by garments, which accounted for 75 percent of exports in 2002, and 70 percent in 2007. Other notable exports are agricultural commodities and fisheries. According to the recent data from the Ministry of Commerce,<sup>17</sup> garment exports in 2009 in value terms dropped by 16 percent from 2008. According to the UN Cambodia Country Team,<sup>18</sup> the Garment Manufacturers Association of Cambodia (GMAC) reported that most garment factories were running at only 60 to 70 percent of their

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14. Nelmes, "Global Crisis—Impact, Outlook and Policy Options for Cambodia."

15. See, for instance, UN Development Programme, "Cambodia Country Competitiveness Driving Economic Growth and Poverty Reduction"; World Bank, "Sustaining Rapid Growth in a Challenging Environment: Cambodia Country Economic Memorandum" (Washington, DC: World Bank, 2009); Ministry of Planning and UN Development Programme, "Expanding Choices for Rural People," *Cambodia Human Development Report 2007* (2007); World Bank, "Halving Poverty by 2015?"

16. UN Cambodia Country Team, *The Global Economic Downturn: Opportunity or Crisis?*

17. Official data obtained from the Ministry of Commerce, Cambodia.

18. UN Cambodia Country Team, *The Global Economic Downturn: Opportunity or Crisis?*

capacity in 2009, and thus had less need to subcontract to smaller factories. As a result, 50 factories closed and 63,000 garment workers were laid off between September 2008 and September 2009.

The number of foreign tourists visiting the country dropped slightly year-on-year by approximately 3 percent in the first six months of 2009, but then picked up in the second half of the year. Cambodia has received less income from tourism, however, because fewer visitors came from high-income countries such as Korea and Japan; visitors from low-income countries such as Vietnam and Laos filled the gap left by the reduction in Koreans and Japanese tourists.

Construction is one of the sectors hardest hit by the global financial and economic crises because of significant FDI and the real estate boom and bust. The International Labour Organization (ILO) Cambodia<sup>19</sup> estimated that FDI constituted approximately 75 percent of the capital financing most construction work in 2008, and that 30 percent of construction jobs have evaporated since January 2009. Because so many developed countries were directly affected by the global economic crisis, the capital base of investors who invest in frontier markets like Cambodia was substantially reduced. Consequently, dozens of large construction projects have been suspended. Construction companies reported a drastic reduction in the number of contracts in late 2008 they have for future work.<sup>20</sup>

Agriculture was singled out as the sector least affected by the crisis. However, prices of many major commodities declined sharply in 2009, resulting in little or negative profits for many farmers. Even though they harvested more cash crops such as rubber, cassava, and maize, their farming revenue, which is important for their livelihoods, was smaller than that in 2008.<sup>21</sup> Moreover, for Cambodia as a whole, the increase in rice and rubber exports cannot compensate for the decline in garment exports. The 16 percent decline in garment exports translates to a loss of nearly \$500 million gross margins, while the 5.4 percent increase seen in agricultural exports represents only \$30 million in gross margins.

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19. Chandararat Kang, Sok Sina, and Liv Dannet, "Rapid Assessment of the Impact of the Financial Crisis in Cambodia" (ILO Asia-Pacific Working Paper Series, 2009).

20. UN Cambodia Country Team, *The Global Economic Downturn: Opportunity or Crisis?*

21. Cambodia Development Resource Institute, "2009 Cambodia Outlook Conference," *Cambodia Development Review* 13, no. 2 (2009).

**Table 2. Projections of 2009 GDP growth in Cambodia**

	Projected in December 2008	Projected in first quarter 2009	Projected in last quarter 2009
ADB	+4.7%	+2.5%	-1.5%
IMF	+4.8%	-0.5%	-2.75%
WB	+4.9%	-1.0%	-2.25%
RGC	+6.0%	+3.0%	+2.10%*

Source: United Nations Cambodia Country Team, *The Global Economic Downturn: Opportunity or Crisis?* (2009); Asian Development Bank, "Macroeconomic Management Beyond the Crisis," *The Asia Development Outlook 2010* (2010); World Bank, World Bank East Asia Update (2010).

\* In January 2010, the Cambodian government reported that GDP in 2009 grew by +0.1%. Chuon Naron Hang, "Macroeconomic Development in 2009" (presentation at the Annual Conference of the Cambodian Economic Association, Phnom Penh, 2010).

The global economic downturn reduced growth in Cambodia in 2009 to, at most, 0.09 percent, the RGC reports.<sup>22</sup> Growth in 2009 likely declined to -2.5 percent. In late 2008, the Asian Development Bank (ADB), the International Monetary Fund (IMF), and the World Bank predicted that Cambodia's GDP would grow in 2009 at 4.7 percent, 4.8 percent, and 4.9 percent, respectively. The government predicted 6 percent growth at the time. However, as new data was obtained, these three institutions revised the numbers down sharply in the first quarter of 2009 to +2.5 percent, -0.5 percent, and -1.0 percent, respectively (Table 2). And as more evidence of the economic crisis emerged, especially in the contracting exports of garments and construction, over the course of 2009 the three institutions revised the figures further downward, into the negatives. After forecasting growth of 6 percent, the RGC later revised it to 3 percent growth for 2009 (during the first quarter of 2009), and then to 2.1 percent in the last quarter 2009. As of early 2010, it estimated 0.1 percent growth for 2009.

The impact on poverty at the national level could not be estimated immediately. Small sample surveys conducted at the time suggested that the rural poor were hardest hit by the economic downturn. A survey of 1,000 households in 15 representative communities throughout Cambodia conducted by the Cambodian Economic Association (CEA) in the wet season in 2008 and 2009 revealed the hardship resulting from the global economic crisis among poor households and poor communities. As many as 70 percent of households surveyed had incurred outstanding loans – loans obtained to fill consumption gaps.<sup>23</sup> Reduction in

22. Hang, "Macroeconomic Development in 2009."

23. Ngo and Chan, "The Impact of the Economic Downturn on Households and Communities in Cambodia."

remittances and income because of the contraction in economic/business opportunities was significant.

# Cambodia's garment and textile industry<sup>24</sup>

Before analyzing the impact of DFQF access on employment, income, and livelihoods in Cambodia, it is important to understand the background and characteristics of the garment and textile industry in the country as well as the competitive and environment factors that affect this sector. This section discusses in detail the development of the industry; contemporary challenges are outlined in the next section.

## Emergence of the garment industry in Cambodia

By the late 1990s, following two decades of civil war and strife, Cambodia was largely at peace and the government had converted from a centrally planned to a market economy. A small number of garment firms were established in the capital city of Phnom Penh in 1994, and the ensuing national stability and a free market catalyzed the industry's development. The garment sector is now one of country's fastest-growing sectors for private investment and by far leads the country's exports. Robust growth in the sector is mainly the result of normalized trade relationship (NTR) agreements, first signed with the EU in 1996 and then signed with the US in 1997. The agreements resulted in Cambodia's being granted MFN status under the GSP agreement. Between 1994 and 1999, Cambodia's garment exports grew by more than 100 percent, from \$495 million to \$1.1 billion, with approximately 90 percent of the country's garment shipments going to the US. This strong performance prompted the US to introduce quotas on 12 categories of Cambodian garment exports in 1999, but these quotas did not significantly affect the expansion of the industry: exports continued to rise to nearly \$3 billion in 2008 as the factories produce more of the items aside from the 12 in the quota system.

The industry has experienced considerable expansion in terms of investment projects and employment as well as volume of exports. According to data from the Ministry of Commerce, as of September 2009, 251 factories were in operation, employing approximately 278,000 workers (a sharp reduction from nearly 350,000 a year earlier), approximately 92 percent of whom are women from rural villages.<sup>25</sup> Among the total number of garment and textile factories, 178 (or 71

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24. In Cambodia, the terms "garment industry" and "textile and garment industry" are used interchangeably.

25. Statistics provided by the Cambodian Ministry of Commerce.

percent) of them are located in Phnom Penh, 47 (or 19 percent) in Kandal Province, and the rest are spread over six other provinces.

## Characteristics of the garment industry in Cambodia

Cambodia's garment sector is highly labor intensive (as is usually the case owing to the nature of the industry). Part of the attraction of FDI to this industry is the availability of a relatively low-cost labor force (most garment workers are young, unskilled women who migrate from rural areas), which translates to low production costs. The managers of garment factories tend to be foreigners, reflecting both the lack of local skilled labor with experience in the industry and the comfortable trust foreign investors have in their own compatriots. The garment industry is characterized by foreign ownerships from mainland China, Hong Kong, Taiwan, Malaysia, Singapore, the United Kingdom (UK), and Korea. These offshore owners also have subsidiary factories in other countries in the region, such as Vietnam, Sri Lanka, and China.

Cambodia's garment industry has tended to confine itself to "cut-make-trim," given the country's shortage of local skills and raw materials for high-value production.<sup>26</sup> As a consequence, Cambodia benefits very little from value-chain gains.<sup>27</sup> Cambodia has not been able to diversify into upstream production, which is textile manufacturing, because of the high cost of physical infrastructure and electricity. So far only a very few companies have invested in the textile sector, such as Manhattan Textile Company owned by American-Taiwanese investors. However, the inability to invest in high-value production does not necessarily place Cambodia at a competitive disadvantage within the region, as long as it taps more benefits from the cut-make-trim part of the value chain.

Rapid development in the garment industry, combined with the country's democratization process, resulted in the brisk growth of unions. However, inexperience on the part of both laborers and management, misunderstandings between Cambodian workers and foreign managers, and lack of adherence to labor laws by some employers have led to labor conflicts. In 1999, to encourage the Cambodian government to improve working conditions in the garment industry, the US government linked the relaxation of import quotas to improvements in working conditions. Since then there has been attention to labor standards not just to follow the demands of the US government but to satisfy

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26. In Cut-Make-Trim (CMT) work, the agent/buyer provides the pattern, fabric, and trimmings to the local manufacturer, who then cuts the fabric, sews it into garments, and adds the trimmings before the final product is re-exported to international clothing brands and retailers.

27. Ratnakar Adhikari and Yumiko Yamamoto, "The Textile and Clothing Industry: Adjusting to the Post-Quota World," in *Unveiling Protectionism: Regional Responses to Remaining Barriers in the Textiles and Clothing Trade*, ed. Mia Mikic. (New York: United Nations, 2009).

certain consumer markets that value such standards. The Better Factories Cambodia (BFC) program of the ILO has been put in place to certify and enhance the process.

Currently the factories enrolled in BFC account for 60 percent of Cambodia's garment exports and 31 brands.<sup>28</sup> BFC is projected to be self-sustaining by January 2011. In terms of adherence to ILO core conventions, Cambodia has a clear competitive advantage: it has ratified a higher proportion of conventions compared with other ASEAN members and it has monitoring and auditing systems in place. However, adherence to labor standards no longer comes with a premium, i.e., access to quotas and the US market because the system already expired.

Employment in garment production for the least-developed and low-income countries as a share of total employment in manufacturing ranges from 35 percent in selected low-income countries, 75 percent in Bangladesh, and 90 percent in other selected LDCs including Lesotho and Cambodia. In Cambodia, the National Institute of Statistics estimates that approximately 870,000 people were employed in manufacturing during 2008 (10 percent of the labor force, which is approximately 8 million). For the same year, the garment industry directly employed about 350,000 workers, constituting approximately 4 percent of the total workforce. But the indirect employment effects of the industry are also significant; thousands more positions have been created because of the sector's growth – including jobs in food sales, other services, packaging, etc.<sup>29</sup>

The garment, textile, and footwear industry contributed nearly 16 percent to GDP in 2007, dropping slightly to approximately 15 percent in 2008, which marked the start of the global financial crisis that has so far resulted in the losses of approximately 63,000 jobs in these three sub-sectors.<sup>30</sup> Although the total employment of the garment sector is relatively low compared to other sectors of the economy, the total monthly wages paid to workers in the industry are significant, totaling between \$18 million and \$28 million per month in the past five years (Table 3). Noticeably, there is a large gap between the salaries of line workers and skilled staff in the factory. As Table 3 shows, in 2009 a skilled laborer on average earned approximately \$181 per month, compared with \$86 for an unskilled laborer. Of this, most workers manage to save and send home \$20–\$30 per month. According to the World Bank,<sup>31</sup> remittances from urban areas, where garment factories are the dominant employers of rural migrants,

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28. Kang, Sina, and Dannet, "Rapid Assessment of the Impact of the Financial Crisis in Cambodia."

29. International Labour Organization, "Cambodian Garment Industry: Challenges and Opportunities," *Better Factories Cambodia* (2008).

30. UN Cambodia Country Team, *The Global Economic Downturn: Opportunity or Crisis?*

31. World Bank, "Halving Poverty by 2015?"

constitute 13 percent of total household income in rural areas. It is arguable that the garment industry has contributed to poverty reduction in Cambodia, but not substantially, because of low wages and the relatively small number of jobs created in the industry. Although total employment in the garment industry increased in the years following 2000 (and even grew after 2005), growth in employment seems to have remained stable in 2006 and into 2007, as did the total number of garment factories.

The majority of receiving households use remittances for bridging their consumption gaps. However, some rural people use remittances to invest in the agriculture sector by buying seeds, pesticide, fertilizers, and pumping machines to irrigate.<sup>32</sup> This investment potentially helps farmers to raise their income so that they may be able to afford sending their children to school. The garment and textile industry in Cambodia has thus played an important role in poverty reduction and, potentially, education improvement for young children living in rural villages.

**Table 3. Employment and wages in the garment industry in Cambodia**

	2005	2006	2007	2008	2009
Total number of factories in operation	236	283	285	310	251
Total number of local office staff	5,905	6,860	7,386	7,681	6,705
Total salary of local office staff per month	\$778,914	\$955,546	\$1,101,200	\$1,209,011	\$1,213,059
Average monthly wage, skilled labor	\$132	\$139	\$149	\$157	\$181
Total number of local workers	259,164	317,807	330,607	344,786	277,783
Total salary of local workers (thousands/month)	\$18,193	\$22,444	\$25,666	\$28,076	\$23,897
Average monthly wage (per worker)	\$70	\$71	\$78	\$81	\$86

Note: Data in September of each year.

Source: Statistics provided by the Ministry of Commerce, Cambodia (data in September each year).

Domestic value added in the garment industry has been increasing over time. The US Agency for International Development (USAID) cited the work of Omar Bargwari, and, using the average costs of production in the garment industry, the

32. Lim Sovannara, "Youth Migration and Urbanisation in Cambodia" (Cambodia Development Resource Institute Working Paper 36, Phnom Penh, 2007); Chan, "Costs and Benefits of Cross-Border Labour Migration in the GMS."

Economic Institute of Cambodia (EIC) gives an estimate of the labor-value added in the garment industry that has been made since 2003 to date, presented in Table 4. These estimates assume that all costs – apart from the cost of material – remained more or less stable between 2004 and 2007. As the cost of inputs, administration, and labor remained the same from 2004 to 2007, the operating profit also remained flat. It is interesting to note the decline in operating costs during this period compared with the previous four years, while the labor cost and value added per worker increased.

**Table 4. Value added per worker and input costs in Cambodia**

	1999	2000	2001	2002	2003	2004	2005	2006	2007
Value added per worker	1,705	2,134	2,270	2,168	2,700	2,508	2,489	2,606	2,889
Annual growth in value added per worker (%)	-	25	6	-5	25	-7	-0.1	5	11
Cost of inputs (% of output)	71	61	59	62	57	15	15	15	15
Administrative costs (% of output)	4	4	5	5	4	5	5	9	9
Labor costs (% of output)	n/a	16	12	14	12	15	15	15	15
Operating profits (% of output)	n/a	19	24	20	27	9	9	9	9

Source: USAID, "Factory-Level Value Chain: Analysis of Cambodia's Apparel Industry" (Washington, DC: USAID, 2007): [http://www.usaid.gov/kh/documents/Cambodia\\_ValueChain\\_Garment\\_Industry\\_2008.pdf](http://www.usaid.gov/kh/documents/Cambodia_ValueChain_Garment_Industry_2008.pdf) (drawing from Bargwari, 2005).

## Growth of garment industry in Cambodia

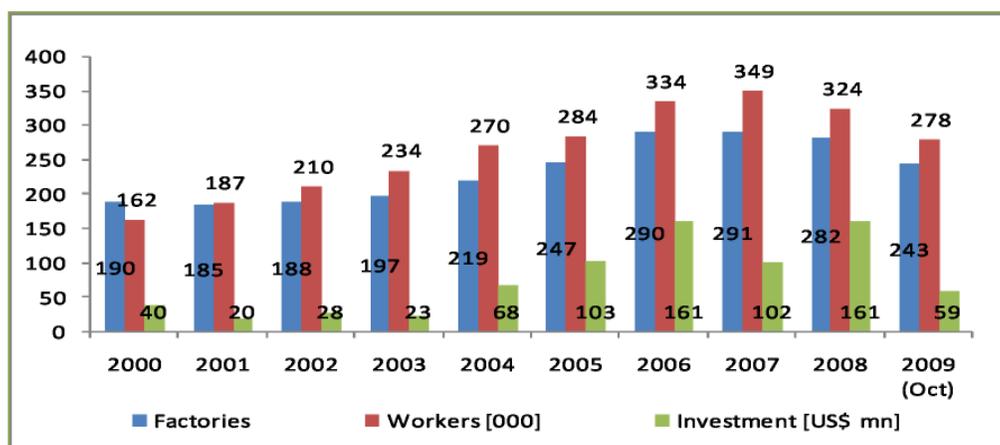
Cambodia's policy of promoting the garment industry by offering favorable investment conditions and tax incentives has served as a catalyst in fostering the sector's development.<sup>33</sup> As illustrated in Figure 3, the number of factories increased from 35 in 1996 to 190 in 2000, and further to the peak of 291 in 2008 before it was brought down by the impact of the global economic crisis. In the period of 1996 to 1998, an average of one garment factory opened per week in Cambodia. As for the number of workers employed in the industry, this rose from some 60,000 in 1996, to 162,000, in 2000 and then peaked at 350,000 in 2007.

33. Hach Sok, Chea Huot, and Sik Boreak, "Cambodia's Annual Economic Review—2001" (Working Paper 36, Cambodia Development Resource Institute, Phnom Penh, 2001).

The garment industry is not an expensive one. Investment in 1996 was only \$13 million to create some 15 additional factories. Investment then accelerated to \$40 million in 2000 and \$161 million in 2006. Even in 2008, when the global economic downturn started to affect Cambodia, investment in Cambodian garment factories remained stable at \$161 million. In 2009 investment saw a real drop, as only \$59 million was injected in the industry. As of September 2009, approximately 278,000 workers were employed by garment factories. However, the number of workers in the garment industry is not constant because the number of factories varies with closures and new openings.

Between 2008 and 2009, 70 factories were reportedly shut down owing to the lack of demand from the US market, but 20 reappeared, thus resulting in a net number of 50 factory closures. These closures caused a loss of approximately 63,000 jobs and of more than \$4 million in wages paid per month.<sup>34</sup> There were concerns about the future of those who lost their jobs, although the Cambodian government has set up a modest Special Fund to support these people in the form of vocational training.<sup>35</sup>

**Figure 3. Quantity of garment factories, employment, and investment in Cambodia**



Source: Graph created by the authors based on data provided by the Cambodian Ministry of Commerce, 2009.

34. UN Cambodia Country Team, *The Global Economic Downturn: Opportunity or Crisis?*

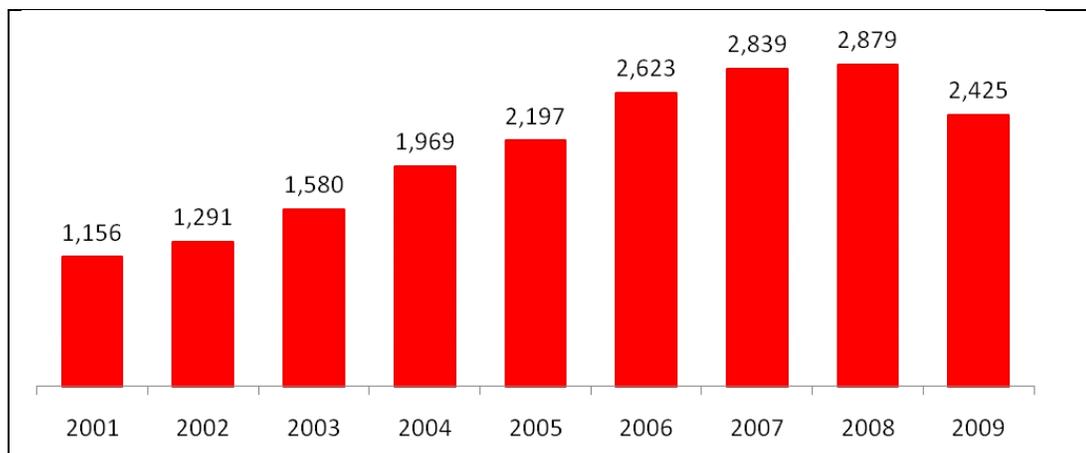
35. This Special Fund, named "Prime Minister Hun Sen's Fund," is designed to support Cambodian workers and was officially launched in 2009. Its purpose is to guarantee the social safety of workers who lost their jobs. This fund has two objectives: (1) Provide minimum safeguards to workers who lost their jobs by offering each of them 4,000 riel (or \$1) per month for a food allowance and 40,000 riel (\$10) for accommodations; (2) Improve productivity and create jobs through offering vocational training.

## Export markets for garment industry in Cambodia

Cambodia's garment exports increased until 2008 (Figure 3). Exports posted \$4 million (export value) in 1994, climbed to \$79 million in 1996, jumped to \$1.2 billion 2001, and steadily rose to \$2.9 billion in 2008.<sup>36</sup> Owing to the US reduction in demand for garment products, Cambodia experienced a decline in garment exports for the first time in 2009. In fact, exports to the Japanese market in 2009 increased significantly in percentage terms, but this increase was from a very low base. It is unclear whether 2010 will see garment exports rally.

Cambodia exports 66 percent of its garment products to the US market, 22 percent to the EU, 7 percent to Canada, and 5 percent to the rest of the world (Figure 5). This industry has represented a significant portion of Cambodia's manufacturing sector and thus GDP. The development of the garment and textile industry in Cambodia also indicated that Cambodia has been moving from a mainly agriculture economy to more of a manufacturing economy, which has enabled the country to accumulate garment skills and possibly has necessitated that Cambodia improve physical infrastructure and other relevant sectors.

**Figure 4. Cambodia's garment export values from 2001 to 2009 (\$ millions)**



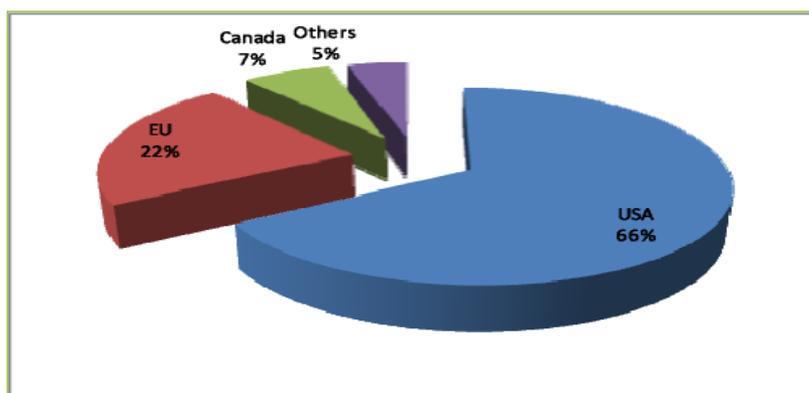
Source: Hang, "Macroeconomic Development in 2009" (presentation at the Annual Conference of the Cambodian Economic Association, Phnom Penh, 2010).

The main market for Cambodia's garments is the US. The US bought 76 percent of Cambodia's garments in 2000 but only 66 percent in 2009, owing to the expansion of other markets. Although Cambodia's garment exports are heavily concentrated toward the US market (followed by the EU, Canada, and Japan), the fastest-growing markets include Canada and the rest of the world as a result of

36. Official data obtained from the Ministry of Commerce, Cambodia.

more relaxed rules of origin requirement. In 2008 and 2009, Japan's purchase of Cambodia's textile and garment products increased 121 percent and 142 percent, respectively, over the previous years, although the figures remain very small in absolute terms.

**Figure 5. Markets of Cambodia's garment products in 2009**



Source: Graph created by the authors based on data provided by the Cambodian Ministry of Commerce.

## Competitive factors and environment for Cambodia's garment industry

As shown by Table 5, Cambodia has surpassed more-established country manufacturers, such as the Philippines, to be ranked among the world's top 20 apparel exporters. But the clothing industry is dynamic; new entrants such as Honduras have emerged in the 2006 world market share analysis, while prominent clothing exporters of the 1990s, such as Poland and Taiwan, are no longer featured among the top 20 exporters. Cambodia's world market share of garment and textile exports is small at approximately 1 percent of the world's garment exports. However, Cambodia features among the top 20 garment exporters worldwide owing in part to the fact that some developing countries have moved from garment and textile production to other, higher-skilled productions such as parts, assemblies, and electronics.

**Table 5. World's top 20 clothing exporters in 1990 and 2006**

Economy	1990 exports (\$ millions)	Economy	2006 exports (\$ millions)	Total world market share 2006 (%)
World	108,408	World	311,410	100.0
EU-25	39,968	China	95,388	30.6
China	9,669	EU-25	83,415	26.8
Hong Kong	15,406	Hong Kong	28,391	9.1
Turkey	3,331	Turkey	11,882	3.8
Mexico	587	India	10,192	3.3
India	2,533	Bangladesh	7,751	2.5
United States	2,569	Mexico	6,325	2.0
Indonesia	1,666	Indonesia	5,699	1.8
Romania	429	US	4,876	1.6
Thailand	2,828	Vietnam	4,838	1.6
South Korea	8,020	Romania	4,423	1.4
Bangladesh	643	Thailand	4,257	1.4
Pakistan	1,028	Pakistan	3,907	1.3
Morocco	722	Morocco	3,238	1.0
Tunisia	1,126	Tunisia	3,174	1.0
Sri Lanka	643	Sri Lanka	3,046	2.0
Vietnam	215	Malaysia	2,842	0.9
Philippines	681	Honduras	2,770	1.9
Taiwan	4,023	<b>Cambodia</b>	<b>2,675</b>	<b>0.9</b>
Poland	365	Philippines	2,604	0.8
<b>Total</b>	<b>95,954</b>	<b>Total</b>	<b>291,693</b>	
% of total world exports	88.5	% of total world exports	93.6	

Source: UN Conference on Trade and Development: <http://www.unctad.org>; World Trade Organization: <http://www.wto.org>.

The growth of the global garment industry and the entry and exit of new and old players reflect the competitiveness of this industry and the relatively low barriers to entry in the cut-make-trim component of the value chain.<sup>37</sup> However, it is important to note the concentration of the industry by some firms (and countries) that have obtained a more-secure supplier position and have expanded into increased value-added activities. At the same time, countries like Cambodia and

37. Adhikari and Yamamoto, "The Textile and Clothing Industry."

Bangladesh remain confined to lower value-added components of the value chain. Cambodia’s export sector is still highly dependent on clothing exports, similar to a number of other LDCs. Though the garment industry is new, Cambodia has by far the highest dependency on it compared with all the other ASEAN countries. In addition, Cambodia faces direct competition from other ASEAN countries in clothing exports. USAID<sup>38</sup> notes that Cambodia imports more knitted fabrics from ASEAN partners than any other producer within the region.<sup>39</sup> Malaysia and Thailand dominate intra-ASEAN trade in textiles, but Indonesia is also a large producer. Table 6 presents the share of exports from Indonesia, Malaysia, and Thailand to Cambodia, Laos, and Vietnam.<sup>40</sup>

**Table 6. Share of textile imports from Indonesia, Malaysia, and Thailand**

Product category	Cambodia	Laos	Vietnam
Knit or crochet fabrics	17	6	5
Yarns (cotton, man-made, wool)	1	1	19
Cotton woven	9	3	8
Man-made woven	2	1	10
Special yarns and nonwovens	3	1	10
Tulle, lace, embroidery, etc.	1	1	1
Other woven of silk, wool, and vegetable fiber	0	0	0
<b>Total share</b>	<b>33</b>	<b>13</b>	<b>53</b>

Source: US Agency for International Development.

### Cost factors

The minimum wage in Cambodia, after adjusting for vacation pay, holidays, overtime, and other mandated or common benefits, was estimated to be \$0.34 per hour, or \$2.72 per day. In contrast, the minimum wage in Vietnam is estimated to be \$0.41 cents per hour or \$3.28 per day.<sup>41</sup> But labor productivity in Vietnam is higher than in Cambodia and has increased at a faster rate than in Cambodia. The minimum wage in Cambodia has effectively increased de facto as a result of cost-of-living increases. An additional increase of \$6 per worker per month was mandated by the RGC as of April 2008 in response to increases in the cost of living (rises in the price of basic goods and fuel, etc.).

38. US Agency for International Development (USAID), “Factory-Level Value Chain: Analysis of Cambodia’s Apparel Industry” (Washington, DC: USAID, 2007): [www.usaid.gov/kh/documents/Cambodia\\_ValueChain\\_Garment\\_Industry\\_2008.pdf](http://www.usaid.gov/kh/documents/Cambodia_ValueChain_Garment_Industry_2008.pdf).

39. Vietnam is the dominant importer of yarns because it has the capacity to weave and/or knit yarns into fabric.

40. In its supply chain analysis, USAID considered exports of textiles products from developed ASEAN member states (Singapore, Indonesia, Malaysia, and Thailand) to least-developed members (Cambodia, Laos, and Vietnam).

41. USAID, “Factory-Level Value Chain: Analysis of Cambodia’s Apparel Industry.”

Mandatory holiday pay is higher in Cambodia, although work stoppages are common and labor is not always paid according to output, such as piece rates. Despite Cambodia’s wages in garment manufacturing being among the lowest in the ASEAN region, they are not the lowest in the world. In addition, USAID<sup>42</sup> notes that low productivity, falling prices, and labor market rigidity continue to exert downward pressure on wages, while labor costs continue to increase through strikes and work stoppages. Based on production line data from the Cambodian Ministry of Commerce, it is clear that the average monthly wages paid to those working within the garment industry have increased, as shown in Table 7.

**Table 7. Wages paid to garment workers in Cambodia<sup>43</sup>**

Breakdown of worker’s salary	Cambodia
Monthly minimum wage	\$45
Monthly attendance bonus	\$5
Cost-of-living increase	\$5
Legal hours of work per week	48
Hourly minimum wage	\$0.30
Attendance bonus	\$5
Seniority (length of service if more than 5 years)	\$5
Overtime (2 hours per day)	\$0.50–\$1.00 (\$12–\$24/month)

Source: Survey by Management Compass Associates (2009).

According to a garment factory survey undertaken in May 2006, conducted by the Economic Institute of Cambodia (EIC), Cambodia’s garment business remained profitable, with an estimated profit margin of approximately 9 percent. Cambodia lacks the local supplies of inputs, especially fabrics, yarns, and buttons. Although the garment industry in Cambodia is concentrated around the cut-make-trim end of production, it generates considerable value-added from labor employment. A number of companies import accessories, cotton papers, and boxes; they sell them to garment producers in the country.

Except for labor, everything is more expensive in Cambodia than it is in Vietnam.<sup>44</sup> Many factories share electricity generators and in some cases are supplied with electricity from neighboring factories. Interestingly, compared

42. Ibid.

43. Other benefits include seniority payments based on length of service.

44. Authors’ interviews with garment managers, 2008.

with Indonesia, electricity costs were not cited as a problem for producers in Cambodia.

Cambodia's infrastructure in terms of roads, railways, ports, air transport, electricity, and phone lines is still a bottleneck to investment, trade, and business. Infrastructure, particularly roads connecting garment factories to main highways, is considered inadequate and often poorly maintained, owing to the shortage of funds for building and rehabilitation. Costs incurred by garment factories have increased as transportation companies have charged more for their vehicles traveling on poorly maintained roads.

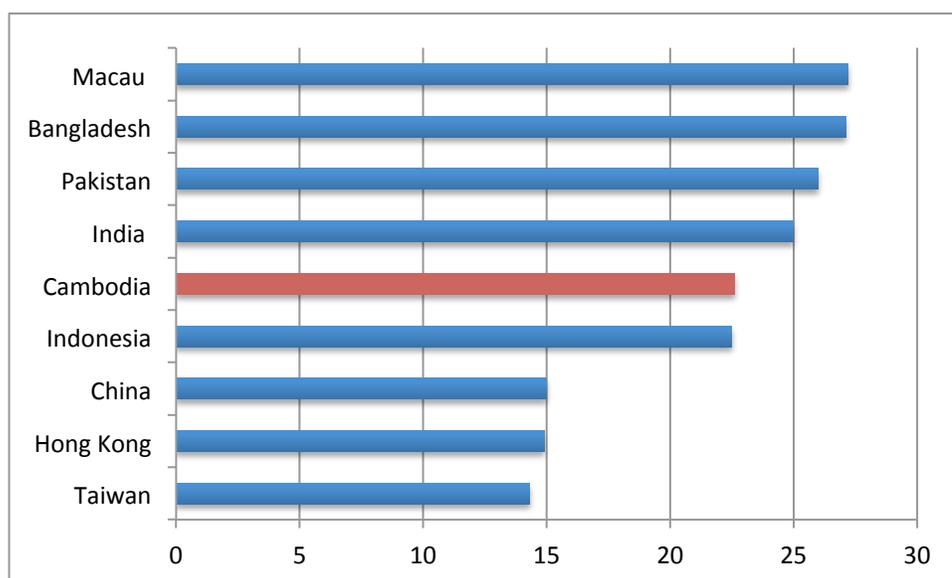
Firm-level interviews conducted by Management Compass Associates (MCA) as part of the Economic Research Institute of Asia (ERIA) for its Cambodia, Myanmar, Laos, and Vietnam (CMLV) project revealed that the costs of exporting and getting customs clearance are high and quite often unpredictable. When all costs are taken into account, Cambodia's competitiveness is reduced, especially when consumers are sensitive to costs, such as during an economic downturn.

As stated previously, low-cost labor is one of Cambodia's most important competitive advantages. Geographically, shipping convenience and lead times are also considered to be major motivations for locating garment production in Cambodia. In terms of shipping routes, Cambodia may be more competitive in terms of lead times, depending on the end market and the source of inputs used in garment manufacture. Figure 6 suggests that products shipped from Cambodia reach the US quicker than those of most other low-cost producers, such as Bangladesh. However, according to a more recent finding by a USAID study,<sup>45</sup> despite Cambodia's favorable geographical location, long lead times were considered a problem. The time taken for intermediate inputs to reach Cambodia and turnaround time within the country are important when it comes to competitiveness. Bangladesh has developed internal national backward linkages with textile producers, which reduces the time taken for intermediate goods to reach factories and therefore total turnaround time. In comparison, Cambodia relies on imported sources from within ASEAN countries. Journey times between Cambodia and China by shipping route are short, but could be shorter in the future by road or railway, advancing Cambodia's competitive advantage.

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45. USAID, "Factory- Level Value Chain: Analysis of Cambodia's Apparel Industry."

**Figure 6. Shipping time to the US (number of days)**



Source: Omar Bargawi, "Cambodia's Garment Industry—Origins and Future Prospects" (ESAU Working Paper 13, Overseas Development Institute, London, 2005).

## Sustainability of the garment industry in Cambodia

Cambodia's competitors to the US and EU garment markets include China and other ASEAN countries such as Vietnam and Indonesia, but also more-established textiles and clothing exporters such as Tunisia, Morocco, and India.<sup>46</sup> Growth in terms of the total number of registered garment factories, employment numbers, and output suggests that the industry continued to be competitive up to 2009. Despite of the end of quotas under the Multi Fiber Arrangement (MFA) of January 2005 and the end of preferential market access to the US under the US-Cambodia Textiles Agreement, Cambodia performed better than expected until the second half of 2008. To accomplish this result, the industry had to rely on its competitive advantages, i.e., cheap labor, good labor compliance, and favorable government policy, as well as preferential market access, to maintain export momentum.

Although the labor standard has been considered Cambodia's main competitive factor after low labor costs, it alone has proven insufficient to maintain the industry's development, as Cambodia faced new challenges in late 2008 and after 2009, when the global economic crisis hit the industry and Cambodia's economy. The key question now is whether the industry will continue to be attractive and

46. Adhikari and Yamamoto, "The Textile and Clothing Industry."

competitive in 2009 and beyond, as the safeguard measures on Chinese exports of textiles and clothing expired at the close of 2008. While it is difficult to exactly pinpoint the negative impact of Chinese exports on Cambodia's garment industry, the removal of safeguards from the Chinese exports of textiles and clothing at the end of 2008 as part of China's accession to the World Trade Organization (WTO) does not help Cambodia's garment industry competitiveness, but increases the competition pressure.

# Contemporary challenges facing the garment industry in Cambodia

## Impact of the global economic downturn on Cambodia's garment industry

The global financial crisis has caused considerable economic slowdown or contraction in many developed countries. In this globalized world, the unprecedented dimensions of the financial crisis have created an economic crisis that threatens many countries. As an export-dependent country, Cambodia has not been spared by the crisis and was unable to withstand the challenges it brought about. The garment industry has been hardest hit by the crisis, resulting in job losses leading to increased vulnerability for those employed in the sector and to those in poor, remittance-dependent households. While economic contraction translates into reduced consumption, few new jobs in manufacturing and servicing countries, such as Cambodia, are created. In particular, 63,000 jobs were terminated, mainly by the closure of 50 factories. Women, who represent the vast majority of the workforce in the garment sector, are disproportionately affected. Box 1 provides case studies showing the impact of the global economic downturn on garment workers who were laid off.

Table 8 indicates a serious decline in Cambodia's garment exports to the US, EU, Canada, and rest of the world, except Japan. The value of Cambodia's garment exports to the US declined by 24.5 percent, while the value to the EU fell by 10.9 percent, and to Canada by 5.5 percent. Garment exports from Cambodia to Japan rose by 141.7 percent in 2009, but the actual increase was only worth \$16 million, which is negligible compared with the nearly \$3 billion of total garment exports from Cambodia in 2008.

It is important to note that the severe decline of Cambodia's garment exports to the US did not all have to do with lower consumption in the US. While the US global garment imports dropped by 12.5 percent in 2009 compared with 2008, Cambodia's garment exports to the US dropped by 24.5 percent. Cambodia's garment exports were less competitive against those coming from Bangladesh and China, both of which managed to increase their exports to the US in 2009. This loss of competitiveness could be more lasting unless US consumers return to their high consumption habits.

**Table 8. Changes in Cambodia's garment exports by destination**

Market	Product	Value in 2008 (\$ millions)	Value in 2009 (\$ millions)	Percentage change
<b>Total</b>	Garments	2,943.00	2,378.00	-19.2
	Textiles	38.50	29.00	-24.7
<b>US</b>	Garments	1,969.00	1,486.00	-24.5
	Textiles	18.79	18.53	-1.4
<b>EU</b>	Garments	644.20	574.11	-10.9
	Textiles	14.42	3.80	-73.7
<b>Canada</b>	Garments	195.93	185.21	-5.5
	Textiles	3.00	2.16	-28.0
<b>Japan</b>	Garments	11.43	27.63	141.7
	Textiles	0.38	0.84	121.1
<b>Rest of world</b>	Garments	122.00	105.16	-13.8
	Textiles	1.90	3.79	99.5

Source: Statistics provided by the Cambodian Ministry of Commerce.

The RGC undertook measures to help mitigate the severe impact of the global economic downturn on the garment industry, including the suspension of the monthly turnover tax of 1 percent on garment factory expenditure and the extension of the tax holiday on profit (at least for garment factories established prior to 2006). In November 2008, the government announced a reduction of export fees for garments and other related bureaucratic costs of 10 percent and helped to diversify the market by seeking growth in markets such as Japan.<sup>47</sup>

### **Box 1: Laid-off garment workers**

Case 1: Single, 24-year-old Lath Sreyaun from Prey Veng province had been unemployed for months after working as a garment worker for six years. As a garment worker she earned \$80 per month, of which \$30 was allocated to support her family of five, and the balance was spent on her food, transport to work, and various personal matters. After tirelessly looking for a job at other factories with no luck, Sreyaun sought a job at a karaoke club and eventually took a position as a karaoke entertainer with a base salary of \$40 per month plus tips. Sreyaun said that her family does not know about the change in her job because she fears that they would not allow it, but the need to keep her brothers at school led her to work at the club to make money. Sreyaun has informed her parents and other relatives that she was still employed, but at another factory.

47. UN Cambodia Country Team, *The Global Economic Downturn: Opportunity or Crisis?*

Source: Fieldwork conducted by the Cambodian Economic Association, July 2009.

Case 2: Va Ratha, 26, married, from Speu village, Cheyo commune, Chamkaleu district, Kompong Cham province, has worked at a garment factory in Kandal province for four years, but she was laid off two months ago. She then returned home to stay with her husband because she could not find a job at other factories. Even though Ratha earned \$120 when she worked at the factory, she was unable to save money because her food and accommodation and other personal expenditures took up \$70 of her total income and she sent the remaining \$50 home to pay her two children's living and education expenses. Ratha now must depend on her husband's minimal income to maintain their livelihoods. Ratha wants to operate a grocery store, but she does not have the capital. Borrowing money to open a store could solve this problem, but Ratha fears the risk of a loss, noting fewer buyers in the market. In a personal request to the government, Ratha requested that the government create more jobs for laid-off factory workers, especially by keeping the garment factories operational, because they provide jobs for women with little education from rural areas.

Case 3: Single, 19-year-old Ean Chen lives in Kompong Speu and has been working as a garment worker since late 2006. As a garment worker she earns \$80 per month, of which \$40 is allocated to supporting her family of five, and the balance of \$40 is spent on her food, transport to work, and some personal costs. In December 2008 she was temporarily laid off because the factory ran out of orders. Chen unsuccessfully applied for positions at two other factories. Chen and her family experienced great hardship while Chen was unemployed because neither Chen nor her family had any savings from her meager income. Chen was called to resume her job in April 2009, but her current position is on a one-month contractual basis and not a long-term employment contract. The contract states that employment can be renewed on a monthly basis, but only at the requirement of the employer. The employee is not in the position to complain if the employer decides to dismiss the employee or discontinue the contract. Even though Chen has to work hard and is sometimes treated rudely by the employer, she still wants to be a garment worker because she possesses no other work skills. In a personal request to the government, Chen asked that the government protect workers from exploitation by employers and help them receive better payments, for example, a salary ranging from \$90 to \$100, to balance out income and expenditure.

Source: Interviews conducted by the UN Cambodia Country Team (2009).

## Cambodia's low labor productivity

The Asian Productivity Organization (APO) collects basic labor productivity statistics for Asian countries. Table 9 presents productivity indicators for Cambodia and other ASEAN countries for which data are available. From 2001 to 2005, Cambodia experienced the slowest rate of increase in labor productivity compared with all other ASEAN countries for which data are available.<sup>48</sup> This finding suggests that value added per worker in Cambodia was low.

**Table 9. Labor productivity by industry (manufacturing) for ASEAN countries, 2001-2005, Index 2000 = 1.0**

Country	2001	2002	2003	2004	2005
Indonesia	0.995	1.046	1.160	1.282	1.274
Malaysia	0.927	1.009	1.063	1.229	1.316
Philippines	0.993	1.041	1.017	1.078	1.130
Singapore	0.959	1.062	1.101	1.260	1.059
Thailand	0.957	1.000	1.055	1.124	1.139
Vietnam	1.018	1.053	1.085	1.120	1.189
Cambodia	0.901	0.949	0.974	1.045	1.045

Source: Asian Productivity Organization, *APO Productivity Databook 2009* (Tokyo: Asian Productivity Organization, 2009).

Unit labor costs are an additional indicator of labor productivity and are calculated as the ratio of the industry's wage bill (in US dollars) over volume. This measure provides a direct link to productivity and the cost of labor. If wages increase but labor productivity remains the same, then unit labor costs will rise, further eroding competitiveness of Cambodia's garments/textiles sector. Clearly, improving labor productivity is critical; such improvements may be a challenge, however, because the bulk of the Cambodian workforce is unskilled or uneducated.

Although unit labor costs have experienced some fluctuation year on year, unit labor costs in 2002 compared with 2007 increased by less than 1 percent. This figure indicates that in the medium term, increases in wages have been matched by productivity. Nevertheless, Cambodia's productivity is lower than other garment exporters, including Bangladesh, as shown by Table 10. In 2009 Bangladesh increased its garment exports to the US market, while Cambodia suffered a huge decline.

48. No data are available for Brunei, Myanmar, or Laos.

**Table 10. Labor productivity by industry (manufacturing) in Cambodia and Bangladesh, 2001-2005: Index 2000 = 1.0**

Country	2001	2002	2003	2004	2005
Cambodia	0.901	0.949	0.974	1.045	1.045
Bangladesh	1.048	1.074	1.095	1.138	1.194

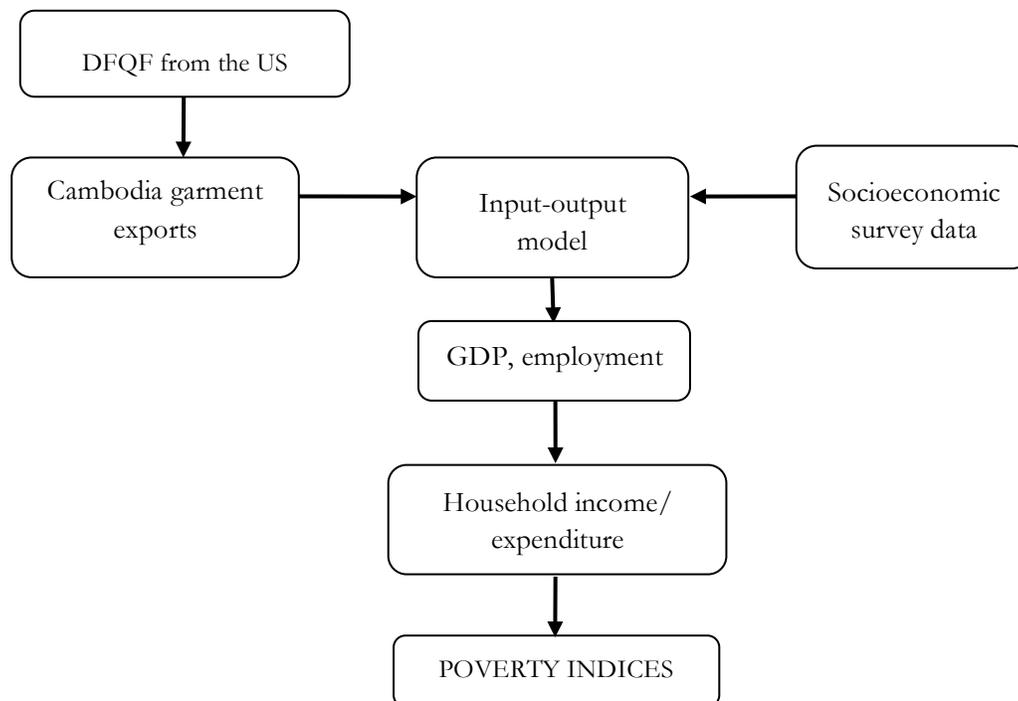
Source: Asian Productivity Organization, *APO Productivity Databook 2009* (Tokyo: Asian Productivity Organization, 2009).

# Assessment of the impact of the US tariff exemption on garment imports on the Cambodian economy and livelihoods

In order to assess the potential impact of DFQF trade preferences with developed countries (and especially the US) on garment sector growth and poverty reduction in Cambodia, we rely on an input-output model and the Cambodian Socioeconomic Survey. The input-output table for 2008 is estimated for Cambodia using the same methodology described by Oum,<sup>49</sup> which will be summarized in the following sections.

The schematic diagram for the analysis is as follows:

**Figure 7. Analytical framework for the impact of DFQF from the US on poverty in Cambodia**



49. Sothea Oum, "A Computable General Equilibrium Model for Poverty and Policy Analysis in Cambodia" (PhD diss., Monash University, 2009).

The analysis of the potential impact of DFQF trade preferences with the US and of general increased preferential access in terms of Cambodian garment exports to the US is estimated by Bouët et al.<sup>50</sup> Using Bouët's results as inputs, we apply the input-output model to quantify macroeconomic impacts on areas including GDP, output, and employment. Together with data from the Cambodian Socioeconomic Survey, we then estimate impacts on household income/expenditure, from which various poverty indices and other impacts are calculated.

## Input-output table and model

The methodology in estimating an input-output table for Cambodia described in Oum<sup>51</sup> is as follows:

The starting of the estimate uses a composite table of Thailand and Vietnam as a representative table to the input-output structure of production in Cambodia. The composite input-output table of Thailand and Vietnam employed in our estimate has the form shown in Table 11. In the table, the cell "intermediate demands" represents a 24 x 24 matrix showing the use of 24 commodities by 24 industries. The values include both imported and locally produced goods and the values of any indirect taxes levied on these flows.

Similarly the cell "final demands" represents a 24 x 4 matrix showing the use of 24 commodities by four final demanders (households, investment, government, exports). Each cell shows the value of a commodity (domestic plus imported, including tax, but excluding trade and transport margins) used by a final demander. Adding these final demands to intermediate demands gives the total demand for goods. The final column is the total demand for domestically produced goods, which include the total demand for goods less imports (valued at tax-inclusive prices).

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50. Antoine Bouët, David Laborde Debucquet, Elisa Dienesch, and Kimberly Elliott, "The Cost and Benefits of Duty-Free, Quota-Free Market Access for Poor Countries: Who and What Matters" (Center for Global Development Working Paper 206, 2010).

51. Oum, "A Computable General Equilibrium Model for Poverty and Policy Analysis in Cambodia."

**Table 11. Schematic input-output table**

	24 sectors	Final demands: households, investment, government, exports	Total demand for goods	Less (CIF imports + tax on imports)	Demand for domestic goods
24 Commodities	Intermediate demands	Final demands for goods and services	Intermediate + final demands	CIF + taxes on imported items	Total less imports
Primary factors	Wages and profits				
Tax on domestic products	Taxes on production				
Total cost	Value of local production				

The cell “wages and profits” includes wages and the value added of firms. The next cell, “tax on domestic products” shows only tax on the output of the corresponding sectors because taxes on inputs are already included in the intermediate demands values.

The sum of all costs of local industries (intermediate demands, wages and profits, tax on domestic products) gives the value of local production. In a balanced input-output table, this sum should be equal, for each sector, to the final column, “demand for domestic goods.”

The balance condition can also be expressed in aggregate terms using the GDP identity:

GDP expenditure = final demands for goods and services - CIF imports  
 = GDP income = wages and profits + tax on domestic products + tax on imports  
 In preparing input-output data, the need often arises to adjust matrix  $A$  ( $24 \times 24$ ) so that it sums to given row and column totals. Given an original matrix  $A(i,j)$ , size  $r \times c$ , and target vectors of row totals  $R(i)$ , size  $r$ , and column totals  $C(j)$ , size  $c$ , the RAS attempts to find a new, similar, matrix  $B(i,j)$  such that:

$$\sum_i B(i,j) = C(j) \quad j = 1, \dots, c \quad (1)$$

$$\sum_j B(i,j) = R(i) \quad i = 1, \dots, r \quad (2)$$

The new matrix  $B(i,j)$  is related to the original  $A(i,j)$  via:

$$B(i,j) = rm(i).cm(j).A(i,j) \quad i = 1,\dots,r \quad j = 1,\dots,c \quad (3)$$

where  $rm(i)$  is a vector of row multipliers and  $cm(j)$  is a vector of column multipliers.

The vector of column multipliers is used to scale all columns so that it meets all its targeted domestic costs of production, gross value added, labor income, and GDP by income and expenditure, and to ensure that demand equals supply. The process is repeated until the balance table is obtained.

Using our balanced input-output table and denoting the  $(24 \times 24)$  matrix of industry's technological coefficients  $A$  (intermediate inputs required per unit of outputs), the  $(24 \times 1)$  vector of outputs  $x$ , and the likewise  $(24 \times 4)$  vector of final demand  $y$ , while  $F$  is the  $3 \times 24$  matrix of factor inputs (land, labor, and capital) per unit of output (one row for each of three factors) and total factor use is the vector  $f$ . Then the basic static input-output model pioneered by Leontief (1986) states that:

$$x = Ax + y \text{ or } (I - A)x = y, \text{ or } x = (I - A)^{-1}y \quad (4)$$

$$\text{and } f = Fx \quad (5)$$

where the inverse matrix  $(I - A)^{-1}$  has been called the *Leontief inverse*. It is also known as the *multiplier matrix* or *matrix of multipliers*. If  $y$  is given, the solution vector  $x$  represents the quantities of sectoral outputs.

Multiplier analysis is widely used to analyze the impacts of changes in final demand on total output or total factor use. If the final demand  $y$  changes to  $y + \Delta y$ , where the individual elements of  $\Delta y$  can be positive, negative or zero, we have:

$$(x + \Delta x) = A(x + \Delta x) + (y + \Delta y) \quad (6)$$

$$\Delta x = (I - A)^{-1}\Delta y \quad (7)$$

$$\text{and } \Delta f = F\Delta x \quad (8)$$

The obvious limitation of the input-output model is the assumption of fixed technical coefficients (the  $A$  matrix); that is, the amount of each input necessary to produce one unit of each output is constant and determined solely by the level of output. There is also no consideration of price effects, substitution, changing technology, or economies of scale. Another strong assumption is that there are no constraints on resources, i.e., labor and capital; supply is infinitely responsive to demand shocks.

## From input-output model to poverty analysis

Linkage between input-output models and poverty analysis can be done by using a socioeconomic survey. Specifically, from the input-output model, we have:

$$\Delta f = F \Delta x \quad (9)$$

$$\Delta Income, h_i = g(\Delta f, v_i) \quad (10)$$

where  $\Delta Income, h_i$  is the change in income of household  $i$  that is a function of change in factor use  $\Delta f$  and household characteristic  $v_i$ .

Because capital and land rentals are not the main sources of income for poor households,<sup>52</sup> we can focus on how changes in employment will affect household income and thus poverty. Therefore, in terms of equation (10), we simply focus on how to allocate gain/loss in employment to each household in the sample of the socioeconomic survey.

We estimate the likelihood of each member of household  $i$  being employed once there is an increase in overall employment as follows:

$$Pr(employed, h_i) = c + \beta_i v_i + \varepsilon_i \quad (11)$$

where  $Pr$  is the probit estimate for the probability of each member of household  $i$  getting employed depends on a constant term  $c$ , household characteristic  $v_i$ , and error term  $\varepsilon_i$ .

We then predict the probability of each household member getting employed across the 24 sectors for the whole sample. We drop out all members in each household who are not in the labor force and those who are currently employed.

The matrix of probability ranking for all household members is given in Table 12.

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52. If households are large landowners and capitalists, changes in these sources of income would hardly make them become poor and are thus not relevant in poverty analysis.

**Table 12. Matrix of probability ranking for all household members**

Ranked probability of member of household $i - N$ getting employed in sector 1 - 24	Sector 1 .....	Sector 24
1	$\Pr(h_{1,1})$ .....	$\Pr(h_{1,24})$
⋮	⋮ .....	⋮
⋮	⋮ .....	⋮
$N$	$\Pr(h_{N,1})$ .....	$\Pr(h_{N,24})$

The matrix of the remaining household members will be then ranked across the 24 sectors so that a simple algorithm is made on the basis that those who have the highest probability will get the job first and followed by the next highest rank. The process will be repeated until the number of new jobs created is exhaustively allocated to the households in the sample.

Because each member of households in the sample of the socioeconomic survey represents a certain proportion (weight) of the population, we calculate the cumulative sum of the ranked household to satisfy the condition that for each sector: the cumulative weighted sum of the last member being employed equals the total number of new jobs created in that sector.

*Cumulative Weighted sum of the last Member = Number of New Jobs*  
(12)

Once all of the potential gain in employment is allocated to members of each household, we can then calculate the change in household income and its impacts on poverty.

Given a vector of individual household incomes (expenditures)  $y = (y_1, y_2, \dots, y_n)$  in increasing order and a predetermined poverty line  $z > 0$ , the FGT index<sup>53</sup> is given by the following formula:

$$P_\alpha(y; z) = \frac{1}{n} \sum_{i=1}^q \left( \frac{g_i}{z} \right)^\alpha \tag{13}$$

53 Foster, James, Joel Greer, and Erik Thorbecke. "A Class of Decomposable Poverty Measures." *Econometrica* 52, no. 3 (1984): 761-766.

where  $g_i = z - y_i$ , is the income shortfall of the  $i^{\text{th}}$  household,  $q = q(y; z)$  is the number of poor households (having income no greater than  $z$ ), and  $n$  is the total number of households.

When  $\alpha = 0$ ,  $P_0$  is commonly known as the poverty headcount index, the percentage of the population with per capita consumption below the poverty line.

When  $\alpha = 1$ ,  $P_1$  is the poverty gap index which is the average shortfall of income from the poverty line, and when  $\alpha = 2$ ,  $P_2$  is the poverty severity index, which gives greater weight to those that fall far below the poverty line than those that are closer to it.

When the  $y$  vector is broken down into subgroup  $m$  expenditure vectors  $y(1), \dots, y(m)$ , the index for each can also be written as:

$$P_\alpha(y; z) = \sum_{j=1}^m \frac{n_j}{n} P_{\alpha,m}(y^{(j)}; z) \quad (14)$$

## Impact of DFQF trade preferences on Cambodian garment exports and implications on domestic production and employment

According to the latest estimate of Bouët et al.<sup>54</sup> using the Modeling International Relationships in Applied General Equilibrium (MIRAGE) model, which is a multisector, dynamic, multiregion computable general equilibrium model devoted to trade policy analysis, if developing countries were given 100 percent DFQF treatment, garment exports from Cambodia would increase by approximately 20 percent.<sup>55</sup>

We regard the results of a 20 percent increase in garment exports from Bouët et al.<sup>56</sup> as the best-case scenario for the full-market access. We also consider two alternatives scenarios: medium- and low-market access where garment exports are set to increase by 10 percent and 5 percent, respectively.

We then use an input-output model with a 24-sector input-output table for the year 2008 estimated by the author and the socioeconomic survey (2004) to conduct the poverty impact of these three scenarios of market access: low-,

54. Bouët, Debucquet, Dienesch, and Elliott, "The Cost and Benefits of Duty-Free, Quota-Free Market Access for Poor Countries."

55. Twenty percent is a rounded approximation. Drawing on the results using two scenarios in two models, the study found that garment exports from Cambodia would increase 19.49 percent and 19.51 percent (representing both models) through 100 percent Organisation for Economic Co-operation and Development (OECD) DFQF market access. Ibid.

56. Ibid.

medium-, and high-market access, where garment exports are expected to increase by 5, 10, and 20 percent for each scenario, respectively. To calculate the total gains for each scenario through direct and multiplier effects, we need to first estimate the direct effect.

The direct effect for each scenario can be divided into two parts: direct export and income effect. From the input-output model, the 5, 10, and 20 percent increase in direct garment exports from the level of \$2.9 billion in 2008 are \$144.4 million, \$289 million, and \$578 million, respectively.

For the direct income effect, the direct export in garments is assumed to lead to gains in labour income in garment by its fixed ratio of labor income in the input-output table, which is approximately 9.3 percent of domestic garment production. We further assume that 90 percent of this income (disposable income) is spent on goods and services by a fixed proportion of household expenditure as in the input-output table. As a result, the direct effects for each scenario are given in Table 13.

The \$144.4 million, \$289 million, and \$578 million increase in direct garment exports would lead to approximately \$12.1 million, \$24.3 million, and \$48.6 million in direct final household expenditure, respectively. Therefore, the total direct effects are \$156.7 million, \$313.4 million, and \$626.7 million for each scenario, respectively.

**Table 13. Direct effect of an increase in garment exports and direct income effect on household expenditure by scenarios of market access (\$ millions)**

No.	Goods	Low			Medium			High		
		Direct export	Direct Income effect on final demand	Total	Direct export	Direct Income effect on final demand	Total	Direct export	Direct Income effect on final demand	Total
1	Paddy		0.05	0.05		0.10	0.10		0.19	0.19
2	Other crops		1.15	1.15		2.30	2.30		4.59	4.59
3	Livestock		0.53	0.53		1.07	1.07		2.13	2.13
4	Forestry		0.01	0.01		0.03	0.03		0.06	0.06
5	Fishery		0.90	0.90		1.80	1.80		3.60	3.60
6	Mining		-	-		-	-		-	-
7	Food, beverage & tobacco		2.34	2.34		4.69	4.69		9.38	9.38
8	Textiles		0.06	0.06		0.11	0.11		0.23	0.23
9	Garments	<b>144.5</b>	<b>0.23</b>	<b>144.76</b>	<b>289.06</b>	<b>0.47</b>	<b>89.53</b>	<b>578.1</b>	<b>0.93</b>	<b>579.06</b>
10	Footwear		0.07	0.07		0.15	0.15		0.30	0.30
11	Wood, paper & publishing		0.29	0.29		0.58	0.58		1.15	1.15
12	Chemical, rubber & plastic		0.64	0.64		1.29	1.29		2.57	2.57
13	Nonmetallic mineral		0.01	0.01		0.02	0.02		0.03	0.03
14	Basic metals		-	-		-	-		-	-
15	Other manufacturing		0.55	0.55		1.11	1.11		2.22	2.22
16	Electricity & water		0.51	0.51		1.03	1.03		2.05	2.05
17	Construction		-	-		-	-		-	-
18	Trade		0.22	0.22		0.44	0.44		0.87	0.87
19	Hotel & restaurants		1.17	1.17		2.33	2.33		4.66	4.66
20	Transport & communication		0.18	0.18		0.36	0.36		0.73	0.73
21	Finance		0.09	0.09		0.17	0.17		0.35	0.35
22	Real estate & business		0.44	0.44		0.87	0.87		1.75	1.75
23	Public administration		0.98	0.98		1.96	1.96		3.92	3.92
24	Other services		1.72	1.72		3.44	3.44		6.88	6.88
	<b>TOTAL</b>	<b>144.5</b>	<b>12.1</b>	<b>156.7</b>	<b>289.1</b>	<b>24.3</b>	<b>313.4</b>	<b>578.1</b>	<b>48.6</b>	<b>626.7</b>

We then use these total direct effects from Table 13 to estimate multiplier effects using our input-output model. The results for each scenario are given in Table 14.

For the low-market access scenario, the projected increase in garment exports of \$144.4 million from the base year would lead to an approximately \$141 million increase in garment production (4.7 percent increase from the 2008 base year) and create 14,419 new jobs, of which 11,713 would be female workers in the sector. Through multiplier effect, this employment would induce interindustrial chains of effects across the whole economy. The total gain in GDP would be \$190 million, or approximately a 2.7 percent increase from the base year and 26,618 new jobs, of which 18,322 would be female workers.

Likewise, the potential increase in garment exports from the medium-market access scenario of \$298 million would lead to a total gain approximately \$380 million in GDP, or approximately a 5.3 percent increase from the base year (2008) and 1.4 percent increase in total employment of approximately 53,237 new jobs and, of these, approximately 36,643 jobs for female workers, a 2.2 percent increase from 2008.

Finally, the projected increase in garment exports from the high-market access scenario would lead to approximately a \$562 million increase in garment domestic production and would create 57,664 new jobs, of which 46,841 would be held by female workers in the sector. In total, the gain in GDP would be \$759 million, or approximately a 10.7 percent increase from the base year (2008), with 106,473 new jobs, of which 73,287 would be held by female workers.

Therefore, the DFQF market access for the garment exports from Cambodia to the US and other advanced countries is crucial to revitalize not only the garment industry and for it to rebound from the global economic crisis, but also to stimulate growth in the rest of the economy. Moreover, these very pro-female employment effects, thanks to the prevalence of female workers in the garment factories, are pivotal in the efforts to fight poverty in Cambodia.

**Table 14. Impact of an increase in garment exports on sectoral production and employment by scenarios of market access**

Industry/sector	Base year			Multiplier effect											
				Low market access				Medium market access				High market access			
	GDP (\$ millions)	Employment (person)		GDP (\$ millions)		Employment (person)		GDP (\$ millions)		Employment (person)		GDP (\$ millions)		Employment (person)	
		Total	Female	\$ millions	% change	Total	Female	\$ millions	% change	Total	Female	\$ millions	% change	Total	Female
1 Paddy	504.9	513,467 <sup>a</sup>	264,316	2.3	0.5	1,031	531	4.6	0.9	2,062	1,062	9.1	1.8	4,124	2,123
2 Other crops	454.5	575,167 <sup>a</sup>	293,957	1.3	0.3	1,396	713	2.6	0.6	2,791	1,427	5.3	1.2	5,581	2,852
3 Livestock	293.8	330,983 <sup>a</sup>	170,562	0.7	0.3	695	358	1.5	0.5	1,389	716	3.0	1.0	2,778	1,431
4 Forestry	232.2	53,808 <sup>a</sup>	10,998	1.2	0.5	272	121	2.3	1.0	544	243	4.6	2.0	1,089	486
5 Fishery	569.5	363,225 <sup>a</sup>	82,028	1.0	0.2	626	141	2.0	0.4	1,251	283	4.1	0.7	2,502	565
6 Mining	23.9	11,258	5,333	0.4	1.8	77	36	0.8	3.5	153	73	1.7	7.0	307	145
7 Food, beverage & tobacco	199.1	93,992	39,527	3.8	1.9	217	91	7.7	3.9	434	183	15.4	7.7	869	365
8 Textiles	65.5	11,255	9,143	4.0	6.1	971	789	8.0	12.3	1,943	1,578	16.1	24.6	3,885	3,156
9 Garments	<b>904.6</b>	<b>304,902</b>	<b>247,676</b>	<b>140.6</b>	<b>15.5</b>	<b>14,419</b>	<b>11,713</b>	<b>281.2</b>	<b>31.1</b>	<b>28,838</b>	<b>23,426</b>	<b>562.3</b>	<b>62.2</b>	<b>57,664</b>	<b>46,841</b>
10 Footwear	29.8	7,844	6,372	1.2	3.9	50	40	2.3	7.8	99	80	4.6	15.5	198	161
11 Wood, paper & publishing	68.6	7,380	4,486	0.6	0.8	19	12	1.1	1.6	38	23	2.2	3.3	77	47
12 Chemical, rubber & plastic	155.9	16,767	5,725	1.6	1.0	124	42	3.2	2.0	249	85	6.3	4.0	497	170
13 Nonmetallic mineral	24.5	7,075	2,948	0.2	0.9	15	6	0.4	1.7	29	12	0.8	3.4	58	24
14 Basic metals	24.3	5,042	549	3.2	13.2	116	13	6.4	26.3	232	25	12.8	52.6	464	51
15 Other manufacturing	313.9	35,308	9,754	5.7	1.8	508	140	11.3	3.6	1,015	280	22.6	7.2	2,030	561
16 Electricity & water	36.6	5,028	893	4.3	11.8	54	10	8.6	23.6	108	19	17.2	47.1	217	39
17 Construction	428.2	290,633	24,962	0.5	0.1	164	19	1.0	0.2	328	38	1.9	0.4	655	76
18 Trade	620.7	456,058 <sup>a</sup>	208,698	7.5	1.2	4,263	2,830	15.0	2.4	8,527	5,660	29.9	4.8	17,053	11,320
19 Hotel & restaurants	337.6	85,404	9,130	0.2	0.1	48	3	0.5	0.1	96	6	1.0	0.3	193	12
20 Transport & communication	506.8	235,233	43,199	3.4	0.7	686	385	6.8	1.3	1,372	771	13.6	2.7	2,744	1,541
21 Finance	79.0	15,233	2,669	1.3	1.7	104	64	2.6	3.3	207	128	5.3	6.7	414	256
22 Real estate & business	136.7	69,050	18,782	1.0	0.7	141	38	2.0	1.4	283	77	3.9	2.9	566	154
23 Public administration	367.8	150,465	37,786	1.0	0.3	209	53	2.0	0.5	419	105	3.9	1.1	838	210
24 Other Services	732.0	169,317	70,386	2.9	0.4	414	172	5.8	0.8	827	344	11.5	1.6	1,655	688

<b>TOTAL</b>	<b>7,110.2</b>	<b>3,813,895</b>	<b>1,777,646</b>	<b>189.8</b>	<b>26,618</b>	<b>18,322</b>	<b>379.7</b>	<b>53,237</b>	<b>36,643</b>	<b>759.2</b>	<b>106,473</b>	<b>73,287</b>	
					<b>2.67</b>	<b>26</b>							
	<b>% Change from the base year</b>			<b>2.7</b>	<b>0.7</b>	<b>1.1</b>	<b>5.3</b>	<b>0.45</b>	<b>1.4</b>	<b>2.2</b>	<b>10.7</b>	<b>2.8</b>	<b>4.3</b>

Source: Sothea Oum, "An Estimation of Input-Output Table for the Cambodian Economy 2003" (working paper, Purdue University, West Lafayette, IN, 2008).

Note: a) this is the estimated number of paid workers excluding self-employed farmers.

## Implications on household employment, income, and poverty in Cambodia

In order to estimate the impacts of the increases in garment exports on individual households' employment, income, and poverty, we use household survey data to estimate the probability of members of households becoming employed, based on their gender, age, level of education, health status, and geographical location. The results from the estimates are given in Table 15.

**Table 15. Probit estimate for probability of household members being employed**

Probability of being employed	Coefficient	Standard Error	z	P>z	[95% Confidence Interval]	
<b>Male<sup>a</sup></b>	<b>0.13</b>	<b>0.01</b>	<b>12.30</b>	<b>0.00</b>	<b>0.11</b>	<b>0.15</b>
<b>Age</b>	<b>0.03</b>	<b>0.00</b>	<b>83.97</b>	<b>0.00</b>	<b>0.03</b>	<b>0.03</b>
<b>Level of education<sup>b</sup></b>						
Primary	0.48	0.01	37.54	0.00	0.46	0.51
Lower secondary	0.85	0.02	47.03	0.00	0.82	0.89
High school	0.73	0.03	28.46	0.00	0.68	0.78
Vocational	0.89	0.07	12.27	0.00	0.75	1.03
University	1.36	0.08	17.14	0.00	1.21	1.52
Higher	0.77	0.02	33.37	0.00	0.73	0.82
<b>Health status<sup>c</sup></b>						
Much better	2.62	0.10	25.40	0.00	2.42	2.82
Somewhat better	2.61	0.10	25.77	0.00	2.41	2.81
About the same	2.40	0.10	24.14	0.00	2.21	2.60
Somewhat worse	1.80	0.10	18.02	0.00	1.61	2.00
<b>Geographical location<sup>d</sup></b>						
Banteay Mean Chey	0.54	0.03	18.47	0.00	0.48	0.59
Battambang	0.52	0.03	19.63	0.00	0.47	0.57
Kampong Cham	0.64	0.02	27.97	0.00	0.59	0.68
Kampong Chhnang/Pursat	0.74	0.03	27.40	0.00	0.69	0.80
Kampong Speu	0.81	0.03	27.42	0.00	0.76	0.87
Kampong Thom	0.63	0.03	21.78	0.00	0.58	0.69
Kampot	0.23	0.03	7.88	0.00	0.18	0.29
Kandal	0.55	0.02	22.67	0.00	0.50	0.59
Phnom Penh	0.67	0.03	23.78	0.00	0.61	0.72
Prey Veng	0.87	0.03	32.92	0.00	0.82	0.92
Siem Reap	0.83	0.03	29.78	0.00	0.78	0.89
Sihanouk/Kep/Koh Kong	0.72	0.03	21.35	0.00	0.65	0.79
SvayRieng	0.98	0.03	29.78	0.00	0.92	1.05
Takeo	0.74	0.03	27.21	0.00	0.68	0.79
Constant terms	-3.84	0.10	-37.22	0.00	-4.04	-3.64

Source: Authors' estimates.

Note: Referenced Categories: (a) female; (b) no education, (c) poor health, and (d) other provinces. All coefficients are significant at 99% confidence level

It is worth noting that the potential drawback in applying this method is that the employed workers are assumed to remain in their existing jobs and no between-job and between-region migration is considered. The model only matches the new jobs created to the characteristics of new entrants into the labor market.

Using results of coefficients from Table 15, which are all very significant at a 99 percent confidence interval, we predict the probability of each individual household being employed in the entire sample in the socioeconomic survey. After dropping irrelevant households (those not in the labor force and already employed) and ranking them by descending order of probability across the 24 sectors (as in Table 12), we then allocate each of the new job creations for each sector from Table 14 to highest rank and follow until it exhausts and satisfies the condition stated in the equation (12). Finally the cumulative weighted sum of the last member being employed equals the total number of new jobs created in that sector.

In the next step, we apply the sectoral wage rate per capita per day to the new employed so that we can calculate the changes in their family income, through which we can estimate new poverty indices compared with the base period. The increased income enables us to estimate changes in poverty indices ( $P_0$ , the poverty headcount index or simply poverty rate;  $P_1$  the poverty gap index; and  $P_2$  the poverty severity index) by region using formula (13) and (14). Table 16 shows the poverty indices at the base period using the Cambodian Socioeconomic Survey in 2004 and post-DFQF poverty estimates.

At the base period, the poverty headcount at the national level is 34.7 percent, or 4,523,775 persons, with 9 percent and 3.3 percent poverty gap and severity index, respectively.

For the low-market access scenario, the projected gains in 26,618 new jobs are allocated to new entrants into the labor market according to their ranked probability of becoming employed, estimated from the probit model. As a result, this employment would generate additional income for each family, which in turn leads to a 1 percent reduction in the poverty rate at the national level. The reduction in the poverty rate in other urban areas is approximately 1.5 percent, compared with 1.1 percent in rural areas. However, in terms of the total number of 50,128 people moving out of poverty, 44,514 people are in rural areas compared with approximately 5,299 people in other urban areas. By geographical locations, the poverty rate falls in all areas except the Phnom Penh province, given its initial low rate of poverty.

The impacts on poverty are more significant for the medium- and high-market-access scenarios. With gains of 53,237 and 106,473 new jobs for each scenario, these jobs would lead to increases in income for households across the region and sectors, resulting in approximately a 2 percent reduction in the poverty rate at the national level for the case of medium-market access and 4.2 percent for the full-market access, down from the 34.7 percent poverty rate in the base period. The decrease also holds for the poverty gap and severity index across regions. The reduced poverty rates would translate into approximately 89,633 and 190,606 individuals moving out of poverty for each respective scenario.

**Table 16. Poverty estimates by region and scenarios of market access**

Region	Base period				DFQF – impacts by scenarios of market access (% changes from the base period)											
					Low-market access			Medium-market access				High-market access				
	P1	P2	P3	P1	P2	P3	P1	P2	P3	P1	P2	P3	P1	P2	P3	
<b>Cambodia</b>	(%)	Person	(%)	(%)	(%)	Person	(%)	(%)	(%)	Person	(%)	(%)	(%)	Person	(%)	(%)
	<b>34.7</b>	<b>4,528,578</b>	<b>9.0</b>	<b>3.3</b>	<b>-1.1</b>	<b>-50,128</b>	<b>-1.3</b>	<b>-1.5</b>	<b>-2.0</b>	<b>-89,633</b>	<b>-2.3</b>	<b>-2.5</b>	<b>-4.2</b>	<b>-190,606</b>	<b>-4.8</b>	<b>-5.5</b>
Other urban	17.6	358,406	4.6	1.7	-1.5	-5,299	-1.5	-1.5	-2.4	-8,748	-3.1	-3.7	-4.1	-14,841	-5.5	-7.0
Rural	37.8	4,169,612	9.8	3.6	-1.1	-44,514	-1.3	-1.5	-1.9	-80,316	-2.2	-2.4	-4.2	-175,087	-4.7	-5.3
Banteay Mean Chey	37.2	247,872	9.8	3.6	-1.5	-3,600	-1.6	-1.6	-2.6	-6,510	-2.8	-3.5	-8.1	-19,990	-7.8	-8.5
Battambang	33.7	277,543	7.9	2.6	-1.7	-4,769	-2.9	-3.5	-3.2	-8,985	-3.7	-3.9	-4.7	-12,922	-6.1	-6.8
Kampong Cham	37.0	663,767	9.3	3.3	-1.5	-9,812	-1.4	-1.3	-2.8	-18,628	-2.6	-2.2	-5.0	-33,039	-4.6	-4.2
Kampong Chhnang/Pursat	39.6	355,614	10.3	3.8	-0.5	-1,686	-0.6	-0.5	-1.2	-4,364	-0.8	-0.6	-2.9	-10,428	-2.4	-2.5
Kampong Speu	57.2	424,640	17.0	6.7	-0.4	-1,648	-0.5	-0.6	-0.4	-1,648	-0.5	-0.6	-2.6	-10,917	-3.2	-3.9
Kampong Thom	52.4	367,595	15.5	6.2	-1.6	-5,980	-1.3	-1.2	-1.8	-6,530	-1.5	-1.3	-3.2	-11,595	-2.8	-3.3
Kampot	30.0	167,504	6.6	2.3	-1.2	-2,002	-4.0	-8.6	-1.2	-2,002	-4.0	-8.6	-5.6	-9,402	-7.4	-11.9
Kandal	22.2	290,562	4.8	1.7	-1.3	-3,813	-1.6	-1.4	-2.6	-7,464	-3.2	-3.1	-5.3	-15,274	-7.3	-8.8
<b>Phnom Penh</b>	<b>4.6</b>	<b>50,923</b>	<b>1.2</b>	<b>0.5</b>	<b>0.0</b>	<b>0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0</b>	<b>0.0</b>	<b>0.0</b>	<b>-14.3</b>	<b>-7,298</b>	<b>-13.4</b>	<b>-11.6</b>
Prey Veng	37.3	408,033	8.1	2.7	-0.7	-2,656	-0.2	-0.1	-1.8	-7,374	-1.9	-2.2	-4.8	-19,659	-6.7	-9.1
Siem Reap	51.8	427,336	17.3	7.5	-0.8	-3,582	-1.3	-1.8	-2.3	-9,767	-2.8	-3.1	-2.4	-10,139	-2.8	-3.1
Sihanouk/Kep/Koh Kong	23.2	110,909	4.6	1.4	-0.2	-237	-0.2	-0.2	-0.2	-237	-0.2	-0.2	-0.6	-635	-0.6	-0.6
SvayRieng	35.9	189,585	8.3	2.8	-0.6	-1,075	0.0	0.0	-1.7	-3,237	-5.0	-8.2	-1.9	-3,684	-5.4	-8.7
Takeo	27.7	244,524	6.3	2.1	-1.8	-4,301	-2.5	-3.3	-3.3	-7,992	-4.1	-4.7	-4.2	-10,291	-6.0	-7.5
Others	46.1	301,295	13.2	5.0	-1.7	-5,218	-1.5	-1.1	-1.7	-5,218	-1.5	-1.1	-4.8	-14,510	-5.8	-6.5

Source: Authors' estimates.

It is apparent that the DFQF market access for the Cambodian garment export sector would play a significant role in overall efforts to revitalize the national economy and to reduce poverty.

# Conclusion

Following three decades of civil war and internal strife, Cambodia re-emerged in the late 1990s as a post-conflict economy, growing strongly for more than a decade until late 2008 when the world economic crisis took its toll. The garment industry has indisputably contributed significantly to the on average above 9 percent GDP growth between 1998 and 2008. The industry kept growing at the two-digit level thanks to the trade preferential status granted by the US and the EU, among other countries. Owing to the industry's large employment of rural labor, it is arguable that the development of the garment industry has significantly helped reduce poverty in Cambodia.

However, there is a limit to the achievements of the garment industry. Despite its steady expansion, the industry has absorbed only between 280,000 to 350,000 workers, out of an 8 million-person labor force comprised of individuals trying to make ends meet. Nearly the same number of rural workers has migrated to make a meager income in Thailand, Malaysia, and South Korea, where there are shortages of unskilled labor, such as housemaids and agricultural laborers. With 30 percent of the population living below the poverty line set at \$0.60 per person per day, Cambodia remains one the poorest countries in the region, as well as in the world.

The global economic crisis in 2008–2009 proved that the Cambodian garment industry's reliance on preferential trade access and low-cost labor is not likely to be sustainable in the medium to long term. As a small country with poor infrastructure and high costs of doing business, Cambodia cannot compete with other countries that have better cost advantages. Left to rely on labor standards while labor productivity is still low as a consequence of low human resource skills, the garment industry in Cambodia may not survive the tough competition brought about by China as well as other countries with better human resources, better infrastructure, and more affordable energy.

On its own, Cambodia needs to improve its commercial and competitive environment, including facilitating trade and streamlining bureaucracy. But to sustain its leading industry, an industry that could, for decades to come, provide livelihoods to many who have little education and few skills, Cambodia needs a level playing field with other LDCs that enjoy the duty-free access granted by the US. Indeed, the promotion of vocational training centers is crucial to develop more skilled workers in higher-valued production. Increasing the skill level of labor should translate into higher productivity and value added in order to maintain competitiveness at the later stages of development and to move into

other activities. Learning effects within the economy are cumulative and can work across sectors.

Nonetheless, at this difficult time for the garment industry, DFQF or some increased trade preferences with the US and others would provide breathing space, allowing the garment industry to revitalize and preventing those who are heavily dependent on the industry from slipping further into the poverty trap. DFQF market access would potentially lead to an increase in the country's garment exports and stimulate the national economy through direct employment and income gains and through their multiplier effects. Depending on the extent of market access, the increase in exports would lead to significant gains in domestic production, employment, and poverty reduction. As female workers are prevalent in the garment factories, the expected gains through more employment opportunities are very beneficial for women. Moreover, because DFQF would stimulate economic growth and income gains for households across the region and sectors, the increase in household income would help many to move out of abject poverty both at the national and regional level. These positive impacts would undoubtedly compensate for the employment and livelihood losses experienced owing to the global financial crisis and would be instrumental in helping Cambodia transition into new sectors and toward more lasting and sustainable development.

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