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Cambodia's Special Economic Zones

Peter Warr and Jayant Menon

This study asks whether Cambodia's establishment of Special Economic Zones (SEZs) since late 2005 has been successful, based on the evidence to date. SEZs have attracted significant levels of foreign investment into the country that would not have been present otherwise, creating around 68,000 jobs, with equal or better pay and better prospects than their alternatives. A significant feature of the Cambodian experience is that the government has left the establishment and management of the zones to private sector developers. The policy measures needed to enhance the international competitiveness of the zones are similar to those needed in the rest of the economy: infrastructure must be upgraded; trade facilitation needs to be improved; electricity supplies must be made more reliable; corruption reduced and rules of payment to government agencies clarified; and labour quality must be upgraded through investment in basic literacy and numeracy.

Keywords: Special economic zones, trade, production networks, outsourcing, Cambodia

1. Introduction

This study examines the role of Special Economic Zones (SEZs) within the trade policy of Cambodia. Based on the evidence to date, it asks whether Cambodia's establishment of SEZs since late 2005 has been successful viewed from the Cambodian perspective. The discussion relates these findings to the international literature on the economic value of these zones. The paper builds upon field work conducted in Cambodia in which SEZs were visited in three locations within the country, including interviews with firms operating in these SEZs, managers and operators of the zones themselves, followed by a questionnaire-based survey of firms operating within Cambodia's SEZs.

SEZs are legal, logistical and tax arrangements intended to assist a developing country in attracting export-oriented manufacturing investment (mainly foreign) that would not otherwise happen. The local conditions that would discourage this investment include: poor domestic infrastructure; security of investment; costly regulations; and

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trade restrictions. The rationale of the SEZ is to reduce the costs associated with these deterrents, thereby attracting employment-creating investment into the country. The zone creates a favourable investment environment within a limited geographic area, but does not directly address problems existing within the investment climate outside the zone. Partly for that reason, they have often been called investment enclaves.

The study finds that the SEZs have attracted significant levels of foreign investment into Cambodia, creating around 68,000 jobs, with equal or better pay and prospects than the alternatives that would otherwise have existed. Nevertheless, the SEZs operate as enclaves within the country and do not exhibit the backward or forward linkages to the local economy that the literature suggests are necessary for the success of special zones of this kind. A feature of the Cambodian experience is that the government has left the establishment and management of the zones to private sector developers, avoiding the large and sometimes wasteful public sector set-up costs associated with SEZ establishment in many other countries. Section 2 discusses the changing role of SEZs within the global economy, including the rapidly growing importance of fragmented production systems. The economic literature on SEZs is reviewed in section 3 with a focus on its relevance for developing countries like Cambodia. Section 4 describes the development of SEZs in Cambodia, a relatively new entrant to the global SEZ scene. A recent World Bank survey that compared firms inside and outside the SEZs is briefly summarized in section 5, along with its main findings. Section 6 outlines the results of the authors' interviews with SEZ firms, conducted in October 2014, focusing on the experience of these firms with the economic zone in which they are located. Section 7 reviews the results of the study team's questionnaire survey of SEZ firms, undertaken in October to November of 2014. Section 8 concludes.

2. Special Economic Zones in the Global Economy

Since the 1960s, SEZs, also known as Free Trade Zones or Export Processing Zones (EPZs), depending on the details of their regulations, have grown rapidly in Asia, Latin America, the Caribbean and Africa. A universal feature of all such zones is duty free importation of intermediate goods, provided these goods are fully used in the production process and the final output is fully exported. According to the International Labour Office database on EPZs, in 1986 there were 176 of these zones in 47 countries. Two decades later, in 2006, there were 3,500 in 130 countries. Total employment in these zones was 66 million, of which 40 million was in China, 5.25 million in Mexico and Central America, and a further 3.25 million in bonded factories in Bangladesh.

Production fragmentation is a global manufacturing development that has facilitated the growth of SEZs, accelerating demand for the services the zones offer. This phenomenon makes it possible for the various components of the overall production process of a final good to be divided into many segments, which may differ widely in their cost structure. International trade in intermediate goods makes it possible for these individual processes to occur in different parts of the world, where cost conditions vary widely (Arndt and Kierzkowski 2001). The manufacturer's objective is to reduce the total cost of producing the final good. It pursues this goal by undertaking individual phases of the overall production process in the most suitable locations. Low-wage countries may have an advantage in attracting the most labour-intensive production processes, but not the most skill-intensive processes, because their work force lacks the necessary training. Specialized capital goods may be required for some processes, whether they are skill-intensive or not, but the increased international mobility of these capital goods greatly expands the scope for relocation of labour-intensive processes to low-wage countries (Jones 2000). Production fragmentation does not require SEZs, but these zones can provide a vehicle for attracting the most labour-intensive phases of fragmented production processes to developing countries.

The circumstances that induce multinational firms to locate particular phases of their

overall production process to a country are multidimensional and can change quickly. For example, China's positioning as a low-wage production base for labour-intensive production processes is changing rapidly due to increasing wages, itself a consequence of the country's successful industrialization. Both Chinese and foreign firms are now looking to SEZs in less developed countries, among other possibilities, as vehicles for reducing the total costs of producing their final products. This is achieved by relocating the most labour-intensive processes to countries where labour costs are lower than in China.

A further attraction of SEZs, from the viewpoint of investing firms, is to provide a reserve production base, where output can be increased quickly when operations in the firm's main base, in China, Thailand or elsewhere, are disrupted for some reason. These reserve operations are often referred to as "China-plus-one", "Thailand-plus-one" and so forth. For example, in October 2013, flooding in Thailand's eastern provinces forced the temporary closure of at least seventeen major enterprises in the Amata Nakorn Industrial Estate. Even more severe and widespread flooding had occurred in 2011. The disruptions were costly, preventing many firms from meeting production deadlines and jeopardizing the production of final goods that depend crucially on each part of the supply chain. By having a reserve plant elsewhere, which will be able to ramp up production at short notice, the costs of this sort of disruption can be reduced. For this to happen, the reserve plant requires very good connectivity to the international market to make possible rapid input delivery and export of finished products.

The benefits to the host country from establishing SEZs lie, overwhelmingly, in employment creation at attractive wages. Depending on the industry, workers who initially possess low skill levels may also receive training that will be useful for subsequent employment. Even in the absence of specific skill development, workers become familiar with the routines and disciplines required by factory employment which can enhance their employability elsewhere. Tax revenue can be raised from the firms operating in the zones, depending on the tax regime that is offered, and demand may develop for inputs that can be produced within the domestic economy (backward linkages) rather than imported. For some countries, most notably China in the 1980s, SEZs have been viewed as policy experiments, within which policy reforms could be tried out for possible later adoption within the wider economy.

Five decades of global experience with SEZs has produced a number of lessons that new entrants to the field need to know about. First, SEZs often take as much as five to ten years before producing the large-scale employment benefits that are hoped for (Farole 2011). This incubation period was experienced even in the most successful SEZs in China and Malaysia. Some patience is therefore needed. Second, the SEZ will succeed in attracting new investors only if the zone offers significant cost advantages to internationally mobile manufacturers. It is important for planners to remember that these firms are not captives. They have alternatives and will exercise them by exiting if the zone does not deliver the advantages they seek. After all, many of the firms that arrive in one SEZ have already exited another, after the expected advantages that brought them there failed to materialize or had dissipated.

Third, although many countries have offered generous tax holidays to firms entering the zones, these holidays have made surprisingly little difference to their investment decisions (Farole 2011). Since tax holidays are costly in fiscal terms, they are of dubious merit. The literature on fiscal incentives suggests that they matter only at the margin, after factors such as political and macroeconomic stability are met (Farole 2011).

Fourth, SEZ firms often prefer to source their intermediate inputs internationally unless there is a clear cost advantage from doing otherwise. The reason is that the firms wish to retain their international mobility without disrupting their sources of inputs (Warr 1989). Hopes for large backward linkages and substantial levels of technology transfer to local suppliers are often disappointed. These linkages tend to develop only in countries like China and Thailand where well-developed supporting industries, including

local small and medium-sized enterprises, can be identified and provide cost advantages in sourcing inputs locally. The international evidence is that the existence of SEZs does not necessarily cause these local supporting industries to develop because the SEZ firms are not always interested in sourcing inputs locally. If the induced creation of local industries of this kind is viewed as a necessary condition for the success of the SEZ experiment, the international experience is not encouraging. Especially in poor countries, the principal benefits from establishing SEZs do not lie in this area.

Fifth, the domestic factors most important for a firm's decision to invest in SEZ operations, and subsequently to remain in them, are: labour costs; labour relations, especially freedom from strikes; reliability and cost of infrastructure, especially electricity; and the logistics of importing and exporting efficiently, without costly delays. Corruption at the border causes delay and increases cost. SEZ firms are especially sensitive to these matters.

Finally, SEZs are most likely to produce benefits to the host country when they are part of a broad strategy of economic liberalization extending to the entire economy. When the SEZ is seen as an island of liberalization within an otherwise import-substitution based development strategy, the SEZ experiment may produce some economic benefits, but they will be marginal.

3. Literature on Special Economic Zones

The theoretical literature on the likely impacts of SEZs can be divided into two strands: (i) the orthodox approach, which draws on neoclassical economic theory, and (ii) the heterodox approach, which draws on endogenous growth theory and new institutional economic theories. The orthodox approach focuses on the effects of SEZs on static economic welfare, resting on whether they contribute to or distort allocative efficiency. Hamada's (1974) study is considered the first study on SEZs to adopt this approach. It assesses SEZs primarily within the Hecksher-Ohlin model of international trade, focusing on static economic metrics and abstracting from possible secondary, catalytic effects. The static effects include: direct employment generation; FDI inflows; foreign exchange earnings; and economic value added. This approach views SEZs as a second best option to full trade liberalization; as such, SEZs are best treated as transitory policy instruments which lose their significance as the country moves toward full-fledged market reforms (Warr 1989; Aggarwal 2010; Baissac 2011; Farole and Acinci 2011; Cheesman 2012; Woolfrey 2013).

The heterodox approach, on the other hand, emphasizes dynamic effects and sees SEZs playing a more catalytic role in promoting broader economic growth. This approach has dominated much of the work on SEZs since the late 1980s. Building on endogenous growth and new institutional theories, the heterodox approach views SEZs as having dynamic spillover effects, extending benefits beyond their enclaves through their impact on backward linkages, human capital, technology, and institutional reforms (Milberg and Amengual 2008; Aggarwal 2010; Baissac 2011). Table 1 summarizes the static vs. dynamic benefits expected from SEZs, according to this literature.

Recent literature on SEZs further emphasizes the dynamic and indirect effects that they might have. This literature has been influenced heavily by the "new economic geography" (NEG), which stresses skill formation, knowledge spillover, technology spillovers and backward and forward linkages (Cheesman 2012). This literature also highlights cluster effects, in which similar firms group together with positive spillovers of the kind hypothesized by the NEG. Aggarwal (2010) extends the earlier heterodox approach to include their potential impact on industrial formation of industry clusters and the integration of domestic firms into global value chains (GVCs). Aggarwal (2010), FIAS (2008) and Baissac (2011) consider agglomeration and GVCs as important drivers of competitiveness and industrial upgrading, and view SEZs as making important contributions to both outcomes.

It should be emphasized that the NEG literature is largely theoretical, with selected high- and upper middle-income countries as the main examples offered for the claims being made. Its

TABLE 1
Static vs. Dynamic Effects of SEZs

Static Benefits	*Dynamic Benefits*
Foreign exchange earnings	Skills upgrading
FDI	Testing field for wider economic reform
Employment generation	Technology transfer
Government revenue	Demonstration effect
Export growth	Export diversification
	Enhancing trade efficiency of domestic firms
	Formation of industry clusters
	Integration into global value chains

SOURCE: Adapted from Zeng (2011*a*), extended to include Aggarwal (2010).

relevance for the actual circumstances of SEZs in least developed countries (LDCs) is unclear, and the present study will return to this set of issues in light of the experience of Cambodia, discussed below.

Studies on the impact of SEZs have produced mixed results. FIAS (2008) reports that SEZs can be an effective tool for job creation, particularly in countries with small populations. Farole and Akinci (2011) also cite empirical research showing that many SEZs have been successful in generating exports and employment and that SEZs have commonly come out marginally positive in most cost-benefit assessments. Milberg and Amengual (2008) note that most research from the 1990s finds scant evidence of SEZs' positive impact on backward linkages, technology transfer, or industrial upgrading. They stress that while some economies, such as South Korea and Taiwan, have managed to create substantial linkages (see also Farole and Akinci 2011), domestic orders remain at a very low level, with the most common range of domestically purchased inputs lying between 3 and 9 per cent. The authors also note that technological spillovers are rare, since the low-skill assembly type production commonly found in SEZs is not conducive to technology transfer. Finally, while developing countries have managed to increase their share of world exports of manufactured goods, their share of manufacturing value-added has not increased proportionately, suggesting that SEZs have failed to spur industrial upgrading significantly.

As for SEZs catalysing the formation of industry clusters, Zeng (2011*a*) cites Krugman and Venables (1996) to argue that industry clusters are formed mainly by market forces or by accident. While some clusters have risen out of SEZs, Zeng notes that these have been slower to develop, and that it is "easier to devise policies for a functioning cluster and devilishly hard to call a cluster into existence, especially when the essential industrial nuclei are difficult to identify" (Zeng 2011*b*, p. 7, citing Yusuf, Nabeshima and Yamashita 2008). The literature contains few examples of government initiatives successfully engineering the development of industry clusters. Government agencies are far less knowledgeable about the requirements for success in this area than business people themselves. Policies that create the circumstances in which successful clusters might develop are another matter. They include establishment of an investment-friendly regulatory environment and focused provision of essential infrastructure — roads, electricity, telecommunications and water supplies — in areas close to the SEZ and to transport hubs.

Despite the substantial body of work on the theoretical underpinnings of SEZs and their contribution to development outcomes, critical

knowledge gaps remain. First, most studies examining the impact of SEZs have employed descriptive analyses and case studies of selected SEZs. But very little has been done in the area of formal, empirical analysis. Second, in the case of Asia, the existing research has tended to focus on the newly industrialized economies such as South Korea and Taiwan or the original ASEAN members. Very little work has been done on the experiences of the least developed countries (LDCs) in Asia.

A serious limitation of the literature on SEZs is that it tends to search for both characteristics of SEZs and the benefits the host country may expect from them that are similar for all host countries. It largely overlooks the fact that host countries vary greatly in their level of development, from primarily agrarian African economies, to middle-income industrializing economies in Asia, and finally to advanced industrial economies in Europe, North America and some Asian countries. The SEZ is an administrative and legal platform that will result in forms of investment and levels of interaction with the domestic economy that depend on the stage of development of the host country. This helps explain why the characterization of the impact of SEZs varies so much. Rather than describing mutually inconsistent representations of the same phenomenon, the various strands of the SEZ literature are better understood as stylized descriptions of SEZs at different stages of host country development.

Stage I. In low-income countries enclave development must be expected from SEZs because the domestic economy is insufficiently developed to sustain backward linkages from the SEZ firms to domestic firms. The host economy is characterized by low-productivity agricultural employment and the main benefit derived from the SEZ is to employ large numbers of people in higher productivity and higher paid unskilled and semi-skilled manufacturing jobs. This stage of host country development corresponds to the "orthodox" SEZ literature discussed above and examples include the SEZs located in Sub-Saharan Africa, South Asia and LDCs of Southeast Asia (Warr 1989).

Stage II. In more advanced economies, linkages between footloose SEZ firms and domestic firms become profitable because they reduce SEZ firms' costs. Dynamic effects within the host country result from the technology transfer that results from these backward linkages. This stage of host country development corresponds to the "heterodox" SEZ literature discussed above. Examples include the SEZs of Northeast Asia and Malaysia (Athukorala 2014).

Stage III. At higher levels of host country development SEZs can facilitate the formation of clusters of industrial enterprises that produce mutually beneficial interactions among themselves. This is what the NEG literature describes. Examples include the SEZs in Ireland and North America.

4. Special Economic Zones in Cambodia

The legal framework for SEZs in Cambodia was established by a government sub-decree issued in late 2005. In 2014 there were nine such zones operating in the country, listed in Table 2, with a further twenty authorized to begin operations. The SEZs are still relatively small. Total employment in all of Cambodia's SEZs is currently around 68,000. Manhattan SEZ in Bavet is the largest, with total employment of 28,000, while the other two SEZs in Bavet employ a further 8,000. Phnom Penh SEZ employs 17,000 workers, Sihanoukville's three SEZs employ just under 10,000 and the zones in the Thai border areas of Koh Kong and Poipet employ just under 5,000. The SEZs therefore represent just under 1 per cent of total employment and 3.7 per cent of total secondary industry employment in Cambodia (Table 3). By comparison, Cambodia's garments sector, mostly outside the SEZs, reportedly accounts for about 600,000 employees, about 38 per cent of total secondary industry employment, or ten times the size of all SEZs combined.

The government's purpose in establishing SEZs was to promote diversification of the industrial base beyond electronics, to establish economic linkages between urban and rural areas and to promote industrial investment outside Phnom

TABLE 2
SEZs in Cambodia, 2014

Location	*Name of SEZ*	*Year Established*	*Number of Firms Operating*	*Total Employment*	*Employees per Firm (avg.)*
Phnom Penh	Phnom Penh SEZ	2008	50	17,000	340
Bavet	Manhattan SEZ	2006	26	28,051	1,079
	Tai Seng Bavet SEZ	2007	17	7,968	469
	Dragon King SEZ	2013	2	280	140
Sihanoukville	Sihanoukville SEZ 1	2009	2	424	212
	Sihanoukville SEZ 2	2008	40	8,967	224
	Sihanoukville Port SEZ	2012	2	416	208
Poipet	Poipet O'Neang SEZ	2011	2	830	415
Koh Kong	Neang Kok Koh Kong SEZ	2005	4	3,953	988
Total	All Cambodian SEZs	2005	145	67,889	468

SOURCE: Authors' calculations, based on data provided by Council for the Development of Cambodia (CDC), Royal Government of Cambodia.

TABLE 3
Employment in Cambodia, 2013

	Cambodia	*Phnom Penh*	*Other Urban*	*Other Rural*
Employed Population (thousands)	7,951	942	810	6,199
Agriculture (Primary)	3,871	19	108	3,743
Industry (Secondary)	1,579	236	152	1,191
Services (Tertiary)	2,501	687	550	1,265
Sectoral Share of Total Employment (%)				
Agriculture (Primary)	48.7	2.0	13.4	60.4
Industry (Secondary)	19.9	25.1	18.8	19.2
Services (Tertiary)	31.5	72.9	67.9	20.4
Total	100	100	100	100

NOTE: Percentages may not add to 100 due to rounding differences.
SOURCE: National Institute of Statistics (2013).

Penh (World Bank 2014). Cambodia's SEZs are almost entirely privately owned and managed.[1] To establish an SEZ, an operator needs at least 50 hectares (124 acres) of land, must build the roads as well as provide electricity and water to service prospective firms. The firms that choose to locate in the zone are then contractually required to purchase electricity from the zone operator, a source of friction between zone proprietors and firms when cheaper sources of power subsequently become available from sources outside the SEZ.

The government provides a "one-stop" service in which representatives of all relevant government ministries are present on the SEZ site, available

to process the documentation firms require for export, import, employment and other regulatory matters on site. This service is intended to remove the necessity for firms to visit ministry offices in Phnom Penh for all but the most important matters. The government's cost in providing this one-stop administrative service must be met by the zone operator, who charges the firms locating within the zone a fee for the package of services provided.

A firm wishing to locate in an SEZ must first obtain government approval as a Qualified Investment Project (QIP), which requires that the firm have a minimum of US$500,000 of fixed assets. There is no distinction between foreign and domestic firms in this respect, but almost all of the firms located in the SEZs are foreign. Approval as a QIP entitles the firm to receive certain government incentives and it is possible for a QIP firm to locate either inside or outside the SEZs.

Outside the SEZs, Cambodia's manufacturing sector is heavily dominated by garment firms. This is less true inside the SEZs, where the industrial base is more diversified, including a higher proportion of firms producing electronics, electrical products and household furnishings than are found outside the zones. Industrial diversification was one of the government's objectives in establishing SEZs and this objective has been met, to a degree. It has the advantage that if the global garment industry suffers a downturn, employment in Cambodia's manufacturing sector will be less vulnerable to this downturn to the extent that it is diversified.

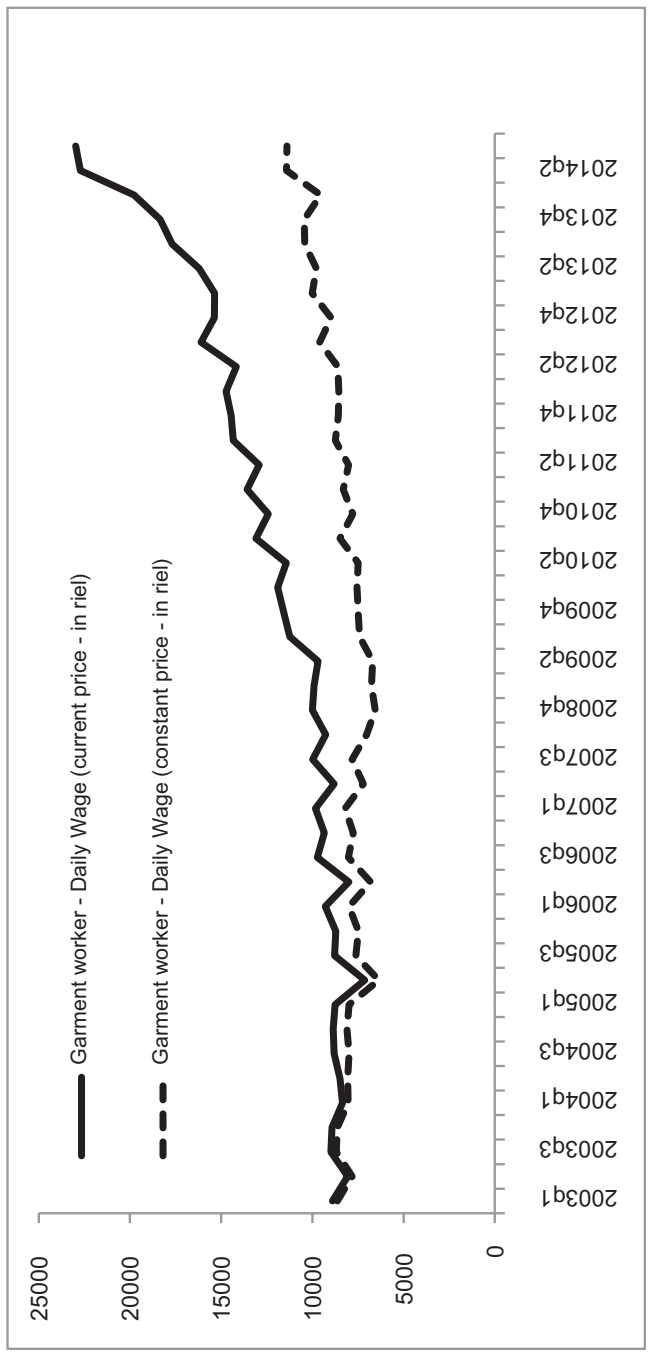
Of the SEZ firms visited by the research team, none had purchased any intermediate inputs from the domestic economy, importing all of these inputs, and almost none produced for the domestic market, exporting virtually all output.[2] Linkages with the domestic Cambodian economy are therefore limited to employment, mostly but not entirely low-skilled production operators, purchase of electricity and water, rental of Cambodian land for the factory sites, and payment of taxes, if any.

Labour costs are low in Cambodia and this is the reason firms were initially attracted to the SEZs, together with, in some cases, favourable tariff treatment in the European Union and United States for goods produced in Cambodia. Although employment conditions in the SEZs seem relatively good, by Cambodian standards, wages paid seldom exceed the legal minimum, not counting prescribed transport and lunch allowances. The legal minimum in Cambodia is currently US$100 per month, plus legally mandated lunch and transport allowances, making a total of about US$145 per month, plus payment for any overtime, leading to average total wages of between US$160 and US$180 per month. Wages in Cambodia's garments sector, a good guide to those paid in the SEZs, are summarized in Figure 1. Real wages have risen in recent years and it is possible, though not at all certain, that the era of cheap labour in Cambodia may thereby be approaching its end. Of course, this is a welcome sign of progress, but it means that Cambodia's edge in attracting investment in labour-intensive manufacturing may dissipate if productivity does not rise.

At least 95 per cent of production workers employed in the SEZs are women. It is said that females possess the nimble fingers and patience with routine tasks required by the labour-intensive processes generally occurring in the zones, and that they are also less likely than males to strike or disrupt production in other ways. The age of production workers is generally 18 to 30 and their home bases are increasingly the most outlying provinces of Cambodia, rather than Phnom Penh. Recruitment of new workers from Phnom Penh is said to have become very difficult.

The economic literature on Cambodia's SEZs is thin. Abonyi, Zola, and Suwannakarn (2013) use a case study approach to examine the role of SEZs in developing border economic areas and linkages between Thailand and other Greater Mekong Subregion countries. Diaz et al. (2012) also use case studies from China, Cambodia, and Laos to draw lessons and identify weaknesses in the Laotian and Cambodian context, compared with China's experience. Cambodia's *Diagnostic Trade Integration Strategy and Trade SWAp Roadmap for 2014–2018* (Ministry of Commerce 2014) also has a chapter on SEZs, analysing their strengths, weaknesses, opportunities, and threats. Finally, the World Bank (2014) reported a survey of SEZ and

FIGURE 1
Nominal and Real Wages in Cambodia, 2003–14



SOURCE: Cambodia Development Resource Institute, Phnom Penh Vulnerable Worker Survey.

non-SEZ firms in an attempt to isolate the impact of operating within an SEZ. The findings are discussed in the following section.

5. Comparison between Firms Inside and Outside Cambodia's SEZs

An Enterprise Survey for Cambodia, conducted by the World Bank in 2012, surveyed industrial firms in the country and these data were kindly shared with the present authors. The dataset summarized below contained fifteen SEZ firms (twelve in Phnom Penh SEZ and one each in Sihanoukville, Bavet and Koh Kong) and 812 non-SEZ firms. The comparison between these two sets of firms, along with *t*-tests of the differences between them, is reported in Table 4. Restricting the sample of non-SEZ firms to those of similar size and operating in similar industries to SEZ firms resulted in a sub-sample of 167 firms. It was therefore possible to assess the differences arising from location in the SEZ itself.[3] The comparison between SEZ firms and this sub-sample, called "comparable non-SEZ" firms is also provided in the table.

The main findings from this comparison include the following differences.[4]

1. SEZ firms tend to be younger, reflecting the recent establishment of the SEZs and the fact that non-SEZ firms have not relocated to the zones.
2. SEZ firms tend to be larger than non-SEZ firms in general but not larger than comparable non-SEZ firms.
3. SEZ firms are more export-oriented than non-SEZ firms in general but not significantly more so than comparable non-SEZ firms.
4. SEZ firms source a much smaller proportion of their inputs from the domestic economy than either group of non-SEZ firms.
5. SEZ firms are more likely to be foreign-controlled than either group of non-SEZ firms.
6. SEZ firms are more likely to use technology licensed from a foreign-owned firm.
7. Wages paid by SEZ firms are somewhat lower, on average, than in non-SEZ firms, but the differences are not statistically significant.
8. SEZ firms are less likely to provide special training to non-production workers but more likely to train direct production workers than non-SEZ firms, but these differences are not statistically significant in the case of comparable non-SEZ firms.
9. No significant difference in labour productivity or total factor productivity could be found between SEZ and non-SEZ firms.

In addition, based on the summary of mean firm-level data reported by the World Bank (2012), SEZ firms are more likely to have an internationally recognized quality certification and are less likely to invest in product and process innovation or in formal research and development (R&D) activities. That is, SEZ firms purchase their technology under licence but do not invest in R&D themselves. SEZ and non-SEZ firms report a similar set of factors as being "major" or "very severe" constraints to their operations: corruption; skills and education of available workers; macroeconomic instability; electricity; and regulatory policy uncertainty. The higher rates of dissatisfaction among SEZ firms regarding corruption and the skills of available workers seem to indicate that the expectations held at the time the firms entered the SEZs have not been fully met. Non-SEZ firms apparently did not share the same high expectations.

The above observations do not suggest that the NEG literature reviewed above is particularly relevant for SEZs in Cambodia. The firms occupying the SEZs are, if anything, less promising candidates for technology transfer than non-SEZ firms because their technology tends either to be low-level or purchased on license from elsewhere. Skills formation could benefit the local economy, but it is not apparent that the SEZ firms offer more benefits in this respect than those outside the zones.

Backward and forward linkages are very small because SEZ firms import most of their inputs and export most of their output. Both linkages are more significant outside the SEZs than within them. This partly reflects the difference in the sectoral composition of the firms, as well as the

TABLE 4
Comparison between Firms Inside and Outside SEZs

Indicators	*Mean Values*			*Tests of Significance of Mean Differences*			
	All SEZ (1)	*All non-SEZ (2)*	*Comparable non-SEZ (3)*	*All SEZ vs. All non-SEZ (1) vs. (2)*		*All SEZ vs. Comparable non-SEZ (1) vs. (3)*	
				t-statistic	*p-value*	*t-statistic*	*p-value*
Age of firm (years)	2.13	10.73	10.43	–4.94	0.00	–4.44	0.00
	(0.56)	(0.24)	(0.56)				
Number of Employees (fulltime)	347.20	145.97	569.57	1.62	0.10	–0.94	0.35
	(164.99)	(16.72)	(69.63)				
Number of Employees (temporary)	7.00	4.23	12.06	0.52	0.60	–0.55	0.58
	(6.65)	(0.72)	(2.67)				
Number of Employees (total)	354.20	150.20	581.63	1.63	0.10	–0.95	0.34
	(164.36)	(16.93)	(70.29)				
Share of Output Exported (%)	63.33	12.45	47.54	5.99	0.00	1.18	0.24
	(12.41)	(1.14)	(3.84)				
Share of Inputs Imported (%)	86.33	18.39	48.40	7.09	0.00	3.02	0.00
	(6.70)	(1.31)	(3.71)				
Share of Foreign Ownership (%)	85.33	17.58	47.87	7.13	0.00	2.90	0.00
	(7.49)	(1.30)	(3.84)				
Firms using Licensed Technology (%)	33	11	17	2.81	0.01	1.52	0.13
	(0.13)	(0.01)	(0.03)				
Wage (US$/month)	71.87	72.73	74.23	–0.07	0.94	–0.33	0.75
	(8.09)	(1.61)	(2.05)				
Wage including Benefit (US$/mth)	94.80	105.34	105.99	–0.64	0.52	–1.13	0.26
	(8.56)	(2.24)	(2.87)				
Training (% of Non-production Workers)	3.08	43.40	14.58	–3.21	0.00	–1.41	0.16
	(2.37)	(2.12)	(2.69)				
Training (% of Production Workers)	86.15	42.42	71.37	3.46	0.00	1.40	0.16
	(8.13)	(2.12)	(3.38)				
Labour Productivity[a]	11,406	23,550	75,446	–0.10	0.92	–0.26	0.79
	(10,487)	(18,057)	(69,211)				
Number of firms in sample	15	797	167				

NOTE: Standard errors are shown in parentheses.
a. Labour productivity is measured as value-added per worker, excluding firms with negative value-added.
SOURCE: Authors' calculations based on 2012 survey data provided by World Bank office, Phnom Penh.

fact that a high proportion of firms outside the SEZs are engaged in the non-tradable goods sector. Cambodia's SEZs are classic enclaves, linked to the international economy but not to the domestic economy. The NEG framework may or may not be relevant for SEZs in more advanced economies, but its emphasis is misplaced when applied to Cambodia and presumably countries like it. Therefore, its policy implications are potentially misleading.

6. Firm Comments on SEZ Experience

The research team visited eleven SEZ firms — Phnom Penh (three firms), Bavet (four firms) and Sihanoukville (four firms) — in addition to SEZ administrators in each of these locations. The comments of these firms on their experience in the SEZ included the following major points.

1. In nearly all cases, the firms involved would not have invested in Cambodia if it were not for the opportunity offered by the SEZs.
2. Firms frequently chose to locate in SEZs established and operated by developers from their own source country. For example, Japanese firms dominate the Phnom Penh SEZ and Chinese firms dominate the Sihanoukville SEZ, zones, which were established and operated by a Japanese and Chinese developer, respectively. The reason is not that firms share technology or buy and sell inputs from one another, but rather that they cooperate in dealing with Cambodian government officials. If it were not for these country of origin links, few of these firms would have invested in Cambodia.
3. Several firms commented that their expectations on entering the SEZ had not been fully met. At least in some locations, the "one-stop" administrative service does not act as a single stop. In the extreme, the outcome can be summarized as "one-extra-stop", as described by one manager. The general experience seems to be that the "one-stop" facility reduces regulatory compliance costs, but not enough to satisfy firm managers.
4. It was commented that Cambodian workers can reach satisfactory levels of productivity but require higher levels of training and longer periods of adjustment to achieve these levels than workers in neighbouring Thailand and Vietnam. The average standard of literacy is not high and at least 30 per cent of new employees have apparently never attended school and cannot read. These workers can only be employed in the most routine manual operations.
5. Some comments indicated that recruitment is becoming more difficult for zone firms. Rates of worker turnover are high and firms report that they must make special efforts to recruit new workers in the most outlying provinces of Cambodia. The labour market appears to be geographically segmented, with limited rural-urban migration at present. Recruitment from Phnom Penh or other major cities is reportedly very difficult. On the other hand, firms do not appear to be offering wages above the legal minimum (plus legally required bonuses) to attract workers, so the situation cannot (yet) be described as one of labour shortage.
6. It was reported that additional payments and "gifts" are demanded by government officials in most interactions. That is, the administration of the SEZs is not corruption-free. One firm manager commented that being in the SEZ makes it easier for government officials to target them for special payments when it is known that large outward or inward shipments are about to occur.
7. Electricity costs are a frequent source of complaint. In the Phnom Penh SEZ, electricity costs US$0.20 per kWh, compared with US$0.07 in Thailand and Vietnam. Electricity accounts for an average of around one-fourth of variable costs, depending on the industry. Interruptions to electricity supplies are frequent, depending on the site, requiring firms to install expensive back-up generators using diesel power, costing around US$0.28 per kWh. In some locations, water quality and waste disposal are also problematic.

8. The SEZ is a fenced area with restricted access from outside. This provides a security benefit which means that workers are safe within the zone area, and also that firms can be shielded from striking demonstrators, who can sometimes be a security threat for firms located outside the SEZs. Once the workers leave the SEZ area, safety can be a problem.
9. Multiple shifts are not as common as they might be. One suggestion for encouraging multiple shifts would be to offer off-peak electricity tariffs below daytime peak rates. This would provide an incentive for firms to operate a second shift outside normal working hours, thereby increasing total employment and making more efficient use of the factory's fixed investments.

7. SEZ Survey Findings

SEZ firms were surveyed with a questionnaire, administered with the assistance of staff of the Cambodia Development Resource Institute and the kind cooperation of the Council for the Development of Cambodia and the administrators in the SEZs listed in Table 5. For logistical reasons, the four SEZ firms located in the Koh Kong SEZ in southwestern Cambodia (Table 2) could not be included in the survey. All 141 firms were asked to complete the questionnaire, with assurance that individual firm responses would be confidential, and 58 firms did so, a response rate of 41 per cent. Although response rates were not uniform across the SEZ locations surveyed, based on the average number of employees per firm (471 among respondents compared with 468 for all SEZ firms) it does seem likely that the results are representative.[5]

Firms in SEZs are unenthusiastic about the quality of public services available to them and the infrastructure provided. These findings generally support the hypothesis, noted above, that SEZ firms entered the zones with higher expectations of infrastructure quality than non-SEZ firms and

TABLE 5
SEZ Survey Respondent Firms Summary

Location	*Respondent Firms*	*Respondent Firms' Summary*				
		Percentage of Sales Exported	*Part of Global Supply Chain (%)*	*Percentage of Inputs Imported*	*Employees per Firm (avg.)*	*Shifts per Day (avg.)*
Phnom Penh	11	100	73	92	274	1.2
Bavet	18	97	89	86	1,035	1.3
Sihanoukville	28	100	86	85	191	1.2
Poipet	1	100	100	100	330	1.0
Industry						
Footwear	7	100	57	56	1,076	1.4
Garments	14	96	100	95	608	1.3
Home Furnishings	14	100	93	89	296	1.2
Light Machinery	7	100	71	83	251	1
Luggage and Bags	5	100	100	90	159	1
Other Light Manufacturing	11	100	82	92	417	1.2
All Respondent Firms	58	99	85	87	471	1.2

NOTE: The four firms in Koh Kong noted in Table 2 were not surveyed.
SOURCE: Authors' tabulation from their survey of SEZ firms, October–November 2014.

that these expectations have not been fully met. An issue of particular concern is electricity. This dissatisfaction is greatest in Bavet and Poipet, where electricity supplies are frequently disrupted, even though the unit cost of electricity is relatively low. Reflecting this, garment sector firms were the most critical of electricity provision. The reliability of electricity supplies seems to be a greater concern than the cost.

Most SEZ firms rent the land on which they operate, except for those in the Phnom Penh SEZ, where more than half the firms own their land. Almost all production workers are Cambodian (Khmer), both low-skilled and semi-skilled, and two thirds of all non-production workers are also Cambodian. The important exception to the latter is in Sihanoukville, where more than half of non-production workers are foreign, predominantly Chinese, reflecting the ownership of most firms located there. Average wages of production workers are higher in Bavet and Sihanoukville than in Phnom Penh, but the reverse applies to non-production workers. Salaries of non-production workers are on average roughly four times those of low-skilled production workers, though this ratio is higher in Phnom Penh than elsewhere. The main labour problem identified by SEZ firms is the low level of skill possessed by their new recruits. Most SEZ firms provide in-house training for their local employees but less than a quarter of these use local training institutions as part of this activity. Foreign sources of capital dominate the financing of SEZ firms, with the firms' own resources the most important, followed by investment from other foreign sources. Local sources of finance are negligible.

Essentially all of respondent firms' sales are international, exported directly by the firm itself. Imported inputs account for an average of 87 per cent of all inputs. The main exceptions are found in the footwear industry, where almost half of the intermediate inputs used are local. Aside from these special cases, the SEZ firms are integrated with global markets but not well integrated with the Cambodian economy. Their main logistical concern is the cost of getting containers between their factory and the port.

Most firms report the existence of an SEZ administration team and about three-quarters of firms surveyed confirm regular meetings with the zone administrators, averaging six meetings per year. Nearly all firms reported satisfaction with this aspect of zone functioning.

The above findings raise the question of why export-oriented firms choose to enter the SEZ enclaves. Is it really the case that the investment environment offered inside the zones is no better than those available outside? Our findings suggest that the facilities are superior to those available within Cambodia outside the zones, though not to the extent that firms may initially have expected when they made the decision to enter the zones. Nevertheless, this may not be the most important benefit derived from operating inside the SEZs. One other major benefit is clear: clustering of firms from the same country of origin and operating in similar industries is very evident within the SEZs and this presumably delivers benefits of agglomeration. However, there is no sign of these cluster effects taking the form of technology spillovers among firms, as hypothesized by the NEG literature. Rather, the clustering of firms in this way facilitates their negotiations with Cambodian government agencies. Cambodia's system of allowing private developers to establish and manage the zones seemingly facilitates this agglomeration effect because it lends itself to development by firms with ties to particular source countries — Japan in the case of the Phnom Penh SEZ and China in the case of Sihanoukville.

8. Conclusions

Within the international literature on SEZs, two criteria for the "success and sustainability" of SEZs are frequently cited: (1) that they address key constraints faced by investors to improve their competitive performance relative to the rest of the economy; and (2) that enterprises in SEZs establish effective linkages with the rest of the economy to improve its overall competitiveness, through supplier relations, transfers of technology, knowledge, and spurring policy reform.[6] It is

not always clear whether these two criteria for success are based on empirical evidence or on *a priori* theorizing, but the implication is that if SEZs do not meet these two criteria, they have failed. It is argued here that these criteria are of limited relevance for a developing country like Cambodia. Although Cambodia's SEZs have so far not satisfied either criterion, they are not failing.

Regarding the first point, to attract the footloose labour-intensive phase of fragmented production processes the important point is not whether the SEZ marginally improves the investment climate within the zone compared with that prevailing in the rest of the same country. Rather, it is whether the environment within the zone is competitive compared with alternative *international* sites available to firms looking to reduce the cost of labour-intensive phases of their overall production process. If all the SEZ did was to encourage firms already operating within the country to relocate to the zone, it would seem likely that nothing significant would be achieved. It is in attracting *new* investment into the country, thereby generating *new* employment, which would not exist in the absence of the SEZ, that a genuine contribution is possible.

Regarding the second point, Cambodia's experience to date indicates clearly that SEZ firms are *not* closely linked to the domestic Cambodian economy, and *less so* than similar firms operating outside the zones, in terms of both forward and backward linkages. But it is argued here that the SEZs do contribute to the economic welfare of the Cambodian people and have the potential to increase this contribution. Even if value-added per unit of output is small and is confined to the labour-intensive enclave activities occurring in the zones themselves, this can be important if the total volume of output is large. The potential for labour-intensive manufacturing employment to expand is vast, given the huge volume of internationally footloose production that exists in the region. By providing employment at higher wages than what unskilled workers can obtain in alternative employment, which may be agricultural work in Cambodia or in neighbouring Thailand, the incomes of the people involved can be increased substantially. It need hardly be said that this is not in itself the answer to Cambodia's long-term development problems. It is at best a component, possibly temporary, of a package of policy measures designed to raise incomes, but it is valuable for the people concerned.

Even though SEZ firms are so far not closely linked to domestic firms within Cambodia, SEZs may have a significant demonstration effect. By showing that manufacturing investment can be successful, beyond the trade preference-driven labour-intensive garments sector that currently dominates manufacturing in Cambodia, the development of SEZs may indirectly promote foreign direct investment outside the zones, though that effect will definitely take time.

An interesting feature of the Cambodian SEZ policy is that the government has intentionally left the establishment and management of the zones to private sector developers. This has avoided the large and sometimes wasteful public sector set-up costs associated with SEZ establishment in many other countries. It also introduces greater market discipline into the running and management of the SEZs, adding to their long-term viability.

The role of SEZs as experimental sites for policy reform was apparently important in China during the late 1980s and early 1990s. It could be important in countries like Cambodia as well, although this argument assumes that governments are more able to learn from events occurring within their own borders than from events observable in similar countries elsewhere. The domestic policy measures needed to enhance the international competitiveness of the zones are similar to those needed in the rest of the economy (U.S. Department of State 2013). Infrastructure must be upgraded to reduce transport costs. Trade facilitation must be improved to reduce cost and delay associated with importing and exporting. Electricity supplies must be improved, especially with regard to their reliability. Corruption needs to be reduced and rules of payment to government agencies clarified. Most important, but most difficult, labour quality must be upgraded through investment in basic literacy and numeracy. The

experience of SEZs can help focus attention on these critical policy issues.

The future of Cambodia's SEZs depends heavily on labour market factors. Cheap labour has hitherto been the principal domestic resource fuelling the expansion of Cambodia's manufacturing sector, including the SEZs. Although labour market prospects remain uncertain there is evidence that the supply of village-level, unskilled and low opportunity cost labour may soon be exhausted. If so, wages will rise. In itself, this is a welcome outcome and a clear sign of the success of Cambodia's development strategy, but it implies reduced international competitiveness for the kinds of labour-intensive operations that currently dominate the SEZs. Rising wages will mean that Cambodia's SEZs may not continue to prosper in their present form unless educational investments raise the productivity of the workforce sufficiently to overcome the resulting rise in costs.

Cambodia's policy of leaving the development of SEZs to private sector developers has an advantage that other countries might consider. Private sector actors are better placed than government agencies to assess the commercial prospects for SEZ development, including likely labour market developments. This provides a mechanism for avoiding the misguided and wasteful public investment in SEZs that has been documented in many other developing countries.

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NOTES

1. A partial exception is the small Sihanoukville Port SEZ, which is a public-private joint venture financed by Japanese Industrial Cooperation Agency (JICA) loan.
2. The exception is one Japanese firm producing packaging material exclusively for a Cambodian beer manufacturer, Angkor. A few other firms indicated that a small share of output is sometimes sold domestically, especially when export demand is slack. In such cases, the firm is legally obliged to pay import duty on the imported intermediate goods used in the production process.
3. These restrictions to the set of "comparable non-SEZ" firms are intended to replicate the procedures described in World Bank (2012). They exclude small firms, non-manufacturing firms and agro-processing firms. In the case of the labour productivity calculations, they also exclude firms reporting negative value-added.
4. The following nine-point comparison is based on the authors' calculations, drawing on the firm level data provided by the World Bank. The data differ in minor respects from the summary reported in World Bank (2012) apparently because of small differences in the samples of firms used.
5. A more detailed summary of the findings from these fifty-eight respondent firms is provided in Appendix Tables A.1 to A.11 of a longer version of this paper (Warr and Menon 2014).
6. Farole (2011) is often cited in this connection.

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