

Xavier Cirera
Rajith Lakshman

The impact of export processing zones on employment, wages and labour conditions in developing countries

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Trade



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Xavier Cirera

Institute of Development Studies, University of Sussex

Rajith Lakshman

Institute of Development Studies, University of Sussex

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Executive summary

Export processing zones (EPZs), also called free trade zones, are one of the most common instruments of industrial policy in developed and developing countries. Despite their proliferation and spread across all countries in the world, there is little evidence about the impact that EPZs have on employment and wages. More importantly, EPZs have been heavily scrutinised by civil society, often accused of employing a 'race to the bottom' strategy in terms of labour conditions.

The objective of this systematic review, therefore, is to collect, review and synthesise the evidence in relation to the impact of EPZs on employment, wages and labour conditions – specifically on freedom of association, health and safety and working hours – in developing countries. In so doing, we only included studies that provide some comparison with labour outcomes outside the zone, thus establishing some degree of attribution between EPZs and labour outcomes.

The results of synthesising 59 studies suggest very mixed results in relation to these labour outcomes. There is no convincing evidence on whether the employment created in the zones is additional, although some studies suggest that a significant proportion is likely to be additional.

There is weak support for the idea of feminisation of the labour force in EPZs, although this is difficult to disentangle from the sector composition of EPZs, or for a positive impact of EPZs in female labour participation.

In most cases, EPZs pay higher wages and do not contribute to an increase in the gender wage gap. There is evidence of problems with unionisation, which is legally discouraged in some cases. However, even where there are no legal restrictions to unionisation, comparing terms of employment with firms outside the EPZ gives mixed results.

The evidence regarding health and safety is also mixed: some studies document a higher prevalence of health problems within EPZs, while others find higher prevalence in firms outside the zone.

Finally, there is evidence of long working hours in EPZs, in some cases compulsory and inadequately remunerated. However, when compared with working hours in firms outside the zone, the evidence is again mixed.

The evidence reviewed suggests that there are several methodological problems with the studies analysed. First, the issue of additionality of employment has not been correctly addressed in the literature. Second, it is likely that the motivation for some of the studies is the existence of previous labour controversies in specific EPZs, which may imply the underrepresentation of studies in areas where there have not been major labour disputes, and a bias towards negative results. Third, the relevance of some of the old studies analysed is not clear, given the increasing change in sector composition and adoption of private and international labour standards in some sectors and EPZs.

Fourth, most studies cannot differentiate between sector and EPZ effects on labour outcomes, given the lack of an appropriate comparison group outside the EPZ. Finally, and again due to a lack of appropriate comparison groups, most studies cannot differentiate between effects on labour outcomes attributable to the EPZ or to domestic institutions, specifically in the case of regulation derogations or a lack of labour law enforcement. This suggests that, in some cases, negative labour outcomes appear to be the result of regulation derogations or of a lack of law enforcement capacity.

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Abbreviations and acronyms

BCDA	Bases Conversion and Development Authority (Philippines)
EPPI	Evidence for Policy and Practice Information Centre
EPZ	export processing zone
FDI	foreign direct investment
FFE	foreign-funded enterprise
FIAS	Foreign Investment Advisory Service
FTZ	free trade zone
IBSS	International Bibliography of the Social Sciences
ICFTU	International Confederation of Free Trade Unions
ILO	International Labour Organization
ISIC	International Standard Industrial Classification
MNE	multinational enterprises
PEZA	Philippine Economic Zone Authority
SEZ	special economic zone
SSCI	Social Sciences Citation Index
VALCO	Volta Aluminum Company

1. The use of export processing zones to promote industrialisation

One of the most common instruments of industrial policy in developed and developing countries is export processing zones (EPZs). The International Labour Organization (ILO) defines EPZs as 'industrial zones with special incentives set up to attract foreign investors, in which imported materials undergo some degree of processing before being exported again' (ILO 1998 p.3). Different countries use different terms to name these specific zones. Singa Boyenge (2007) identifies more than 30 names for zones where there are government incentives to export. The most common names in addition to EPZs are: free zones; industrial zones; special economic zones; or free trade zones. In this review, we use the term EPZ to refer to any zone created with special incentives in order to attract investments oriented mainly (although not necessarily exclusively) for exporting.

EPZs largely proliferated after the Second World War, and have evolved in different ways according to each country's policies. This expansion of EPZs was largely driven by the introduction of export-led growth strategies. In some countries, like China, EPZs can include entire provinces, while in others, EPZs include single firms. The type of activity within the zone has also evolved, with some countries moving from labour-intensive to technology-intensive sectors, or even including service sectors such as tourism.

The large proliferation of EPZs is an indication of the importance of this instrument for industrial policy and export-led growth. Despite the increase and spread in the number of zones, there is little evidence on the additional effect that these have on employment and wages. More importantly, EPZs have been heavily scrutinised by civil society actors, which have often accused them of employing a 'race to the bottom' strategy in terms of labour conditions (ICFTU 2004).

There is a very large amount of literature in this area, including a few surveys. However, this systematic review is particularly important as, to the best of our knowledge, no attempt has been made to collect, review and synthesise all the available evidence on EPZs and labour outcomes using a theory of change model suggested by the theoretical literature.

The objective of this review, therefore, is to identify the impact that EPZs have on additional employment created, wage levels and labour conditions. Regarding labour conditions, we focus on the impact on three key elements: freedom of association; working hours; and health and safety. It is also an objective of the review to evaluate whether there is a specific gender impact related to these outcomes.

2. The design of export processing zones

Many developing countries and some regions in developed countries experience low investment in manufacturing sectors, especially in sectors with more value added and in countries dependent on a narrow export base and very high unemployment. EPZs are an attempt to address these issues, aiming to achieve more manufacturing exports, industrial sector upgrading and employment creation, especially in specific labour-intensive sectors.

As suggested above, there are different types of zones, and these can range from entire provinces to single firms. More importantly, different zones have different types of incentives, which make the comparison of results across countries difficult.

In general, we can separate the main set of incentives into three categories: tax, infrastructure and regulation, as seen in Table 1.

Table 1 EPZ main incentives

Tax exemptions	○ Export taxes ○ Import taxes on inputs ○ Profit and property taxes ○ Other direct taxes ○ Value added tax
Regulation exemptions	○ Exemptions from foreign exchange controls ○ No controls on profit repatriation ○ In some cases, derogation of specific sections of labour laws such as working hours or minimum wages
Infrastructure incentives	○ Specific streamlined government services, such as custom services, business registration ○ Provision of enhanced specific infrastructure for production, logistics and transport, such as better roads, free or subsidised lease of land or industrial plants ○ Subsidised prices in public utilities such as electricity or water

Each zone implements some of the measures with different intensity, depending on: existing domestic market conditions; the ability to attract foreign direct investment (FDI); and the type of sectors targeted to be attracted to the zone. The size of the incentive and subsidy also depends on the general conditions of the economy. For example, in countries with a difficult business environment and where firms find it difficult to operate due to costly administrative and bureaucratic procedures, the size of these incentives is likely to be large. In addition, depending on the sector composition of the EPZ, some incentives play a more important role than others in attracting particular investments. In EPZs concentrated in labour-intensive sectors such as clothing, derogations to minimum wages or limits to the number of hours worked may play an important role in attracting FDI. In other sectors, such as electronics, minimum wage derogations may not have greater impacts since they tend to pay higher wages.

3. How EPZs are meant to work

3.1 Economic theory

EPZs – by definition – are not the best interventions, since they do not directly address some of the problems that may constrain manufacturing growth. The incentives related to these interventions introduce distortions in order to attract investments in specific sectors that *a priori* would not be attracted to the country. This can be the result of information asymmetries for investors or a way of creating enclaves with good business environments in countries where governments face difficulties eradicating investment barriers. In addition, governments use EPZs as an instrument to attract investment in sectors with no clearly defined comparative advantage or as a way of increasing value added in existing export activities. It is likely to be the size of the incentives that determines investment. Therefore, the distortion is greater in cases where the government attempts to attract investment in sectors where the country has little or no comparative advantage.

As a result of the distortionary nature of the intervention, most theoretical analyses of EPZs focus on their impact on welfare. The baseline model is provided by Hamada (1974) using a two-sector and two-factor Heckscher–Ohlin model. Hamada shows that if investment flows to the EPZs are oriented towards producing a capital-intensive good, which is protected by a tariff in the domestic economy, then labour will flow from labour-intensive activities in the domestic economy to the EPZ. This will in turn amplify the distortion imposed by the tariff in attracting resources to the protected sector. Two critical assumptions of the model are the fact that the labour-intensive product is not produced in the EPZ and that there is full employment. When these two assumptions are relaxed, the EPZ is not welfare-decreasing (Hamilton and Svensson 1982; Young and Miyagiwa 1987).

While evaluating the impact of EPZs requires consideration of all these factors, this review focuses on a very specific set of labour market outcomes. Regarding labour markets, Young and Miyagiwa (1987) show that in the presence of Harris–Todaro type of unemployment due to wage rigidities in urban areas, the reductions in the tariffs for intermediate goods in EPZs decreases the impact of the tariff and wage rigidity distortion. This increases wages in non-unionised sectors, reducing the gap with unionised wages and decreasing unemployment. Gupta (1994), however, uses a similar model to suggest that an expansion of the EPZ with a reduction on the tariff on intermediate inputs will result in lower national income and employment. On the other hand, if there is a reduction of the final good tariff, employment and income will grow. Finally, Din (1993) shows that under certain assumptions, the key element that will determine a beneficial impact on employment is whether the enclave sector is capital-intensive in relation to the domestic manufacturing sector. This is due to the fact that expansions in the capital-intensive goods will create fewer jobs than the displacement of labour in the domestic sector, thereby increasing unemployment. The opposite result occurs if the enclave sector is labour-intensive.

The results from these models highlight a few important elements when evaluating the impact of EPZs on labour market outcomes. Specifically, these elements are: the level of tariff distortions in the economy; the factor intensity of

the sector in the EPZ in relation to domestic sectors; and the functioning of domestic labour markets.

It is important to highlight that these theoretical models focus mainly on the effect driven by tariff reductions within the EPZ. One set of incentives, however, that is crucial for the impact on the labour market is derogations of some labour laws. The theoretical impact of these incentives has not been addressed, and may play an important role regarding labour conditions.

A final important element regarding labour market outcomes of EPZs, which has not been addressed by the theoretical literature, is the impact on the feminisation of labour within the zone. The sector composition of EPZs and some of the derogations of labour laws may have a differentiated impact on gender – in other words, larger female employment, an increase in the gender wage gap and worse labour market conditions for women working within the zone.

3.2 The EPZ theory of change

In order to fully understand the causal chain through which EPZs are expected to affect labour market outcomes, Figure 1 presents the EPZ theory of change. The model focuses on labour market outcomes, and ignores important elements about the effectiveness of EPZs – such as impacts on exports, backward linkages or technology diffusion. The latter may be important, since EPZs can have different objectives to justify them, such as:

- industrialisation or increasing the manufacturing share in the economy
- expanding domestic production to new activities
- increasing exports and improving the trade balance
- creating employment
- upgrading and transferring skills
- technology transfer
- linking to domestic firms.

The theory of change (Figure 1) focuses mainly on the direct effects of EPZs on labour market outcomes. However, indirect effects could be important in some cases, for example the remittances generated by EPZ workers may have significant employment impacts on recipient areas.

Figure 1 shows how the different sets of incentives described in Table 1 are expected to attract additional investors to the zones and start producing export goods. This has an impact on employment, wages and labour conditions within the area and in the domestic economy; there may be a differentiated gender impact for each of these outcomes.

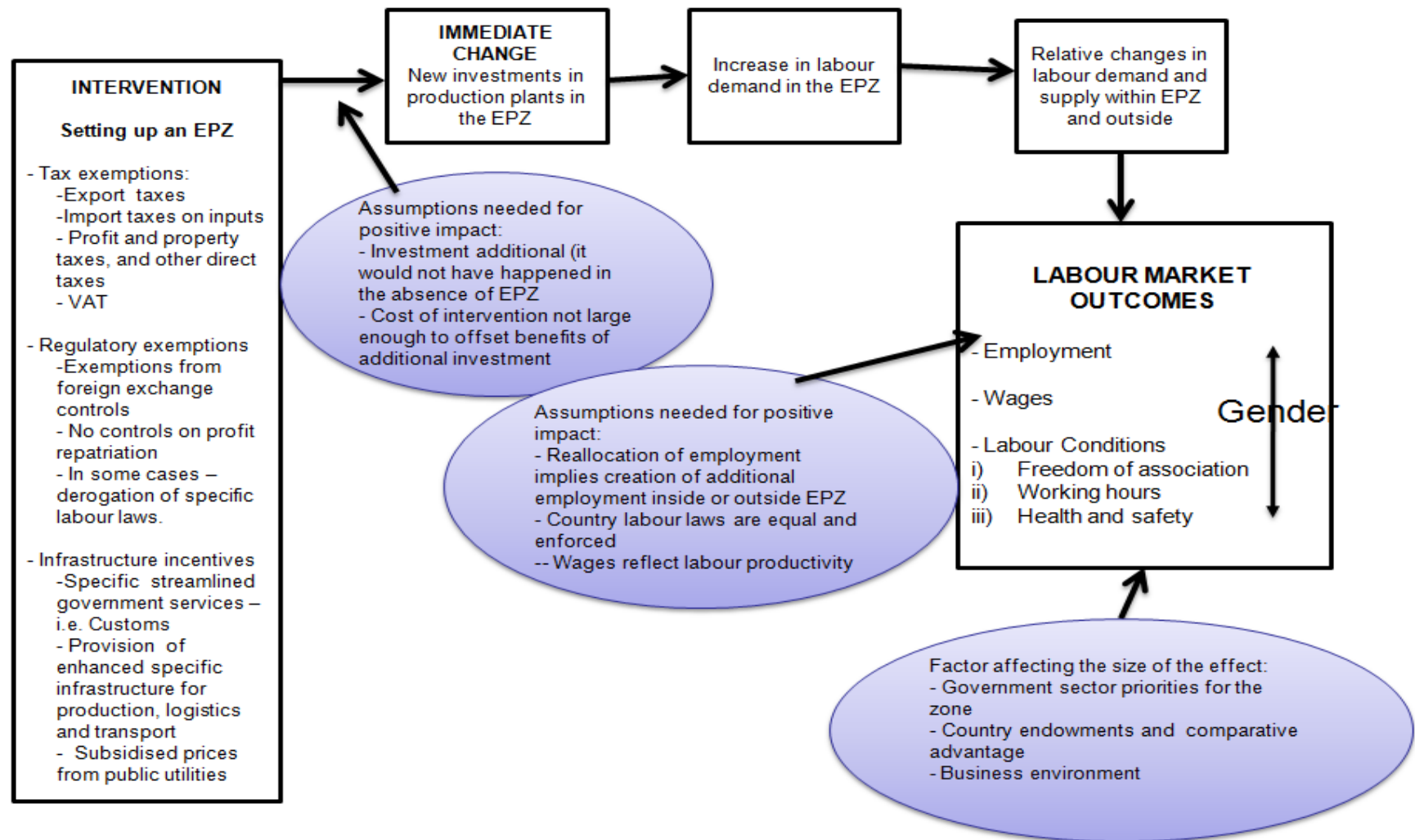
These labour market outcomes should be considered in relation to the domestic economy. Regarding employment, for example, the theoretical models are unclear about the expected impact of the EPZ, but the total effect depends on whether it is only absorbing existing labour from domestic sectors or creating new additional jobs. In other words, what matters is the total impact on employment, not only the impact within the EPZ.

Similarly, the impact on wages has two dimensions. The first is the question of whether EPZs pay more or less wages than they would if they were in the domestic economy. This is more important in cases where there are derogations of minimum wages within the zone. The second is whether the impact on wages in the EPZ has an impact on the wage level of the entire economy. The importance of this economy-wide effect on wages depends on the size of the EPZ relative to the rest of the economy.

In cases where there are derogations of labour laws, labour conditions within the EPZ can be affected. In this review, we focus on three main elements: freedom of association; hours worked; and health and safety conditions.

A cross-cutting element across the three types of labour outcomes is gender impact. There is some evidence that EPZs tend to employ more women than men. A key question, however, is whether this is due to the sector composition of the EPZ (traditionally more female-intensive sectors) or a preference of employers in the EPZs. Feminisation of the labour force in an EPZ may be related to large gender wage gaps, and therefore, when looking at the impact of wages, we should also consider the impact of gender on wages, too. In addition, some case studies suggest that this feminisation of the labour force is related to a greater ability of firms in EPZs to impose worse labour conditions on women than on men. One aspect that we do not address, however, is the impact of labour outcomes on women's well-being more broadly. While this is important, it is beyond the scope of this review.

Figure 1 Logic model



The extent of the impact or effectiveness of interventions depends critically on the following set of contextual factors.

- **The type of sector attracted to the EPZ.** Negative outcomes on labour appear to be correlated mainly with labour-intensive sectors such as clothing, footwear and low-skilled electronics. The capacity to attract different investments and the impact on labour also depend, as the theoretical models suggest, on the relative comparative advantage of the country.
- **The type of labour institutions and the capacity to enforce the law.** Negative labour outcomes may occur in both the EPZ and the domestic economy when institutional capacity is weak. The comparison of labour outcomes also needs to consider the existing business environment within and outside of the EPZ.
- **The need to consider the costs of incentives when evaluating the outcome.** EPZs are second-best interventions that carry out an implicit subsidy, for example tax revenue foregone by the government. Even in cases where there is a positive impact on employment or wages, one should consider whether these benefits outweigh the costs of the intervention. One problem in this case, however, is the fact that it is likely that some of the benefits can be concentrated in other EPZ objectives outside the labour market, for example exports or spillover effects. As a result, we cannot compare the partial benefits or costs arising from labour outcome effects with the full costs of the intervention. In addition, the use of EPZ instruments and the intensity of their use vary significantly across countries, which is also likely to impact on labour outcomes. These are significant limitations of the review.

Finally, there are some significant limitations in the theoretical frameworks reviewed, especially the lack of dynamic gains (economic growth) that are often invoked by policymakers. Issues related to backward linkages, firms' learning, export diversification, spillover effects or technology transfer might be an important source of benefits for the country and may justify the distortions created by the EPZs. These are, however, very difficult to capture in the empirical work.

4. The evolution of EPZs

There has been a large increase in the number of countries implementing an EPZ since the 1970s – from 25 countries in 1975 to 130 in 2006 (Table 2).

Table 2 Evolution of EPZs

	1975	1986	1997	2002	2006
Number of countries with EPZs	25	47	93	116	130
Number of EPZs or similar types of zones	79	176	845	3,000	3,500
Employment (millions)			22.5	43	66
China (millions)			18	30	40
Other countries (millions)	0.8	1.9	4.5	13	26

Source: Singa Boyenge (2007)

Looking at the distribution of EPZs around developing countries and emerging markets, Table 3 shows that most zones are located in Asia and Latin America, and only four per cent in Sub-Saharan Africa. According to the Foreign Investment Advisory Service (FIAS 2008), this accounts for seven to eight per cent of world trade and around 20 per cent of these countries' exports. Although these results are largely driven by China, they show that EPZs are likely to have a greater impact on expanding exports than creating employment.

Table 3 Distribution of EPZs by region, 2005

	Number of zones	% share
Europe and Central Asia	365	15
Middle East and North Africa	240	10
Sub-Saharan Africa	114	4
East and South Asia	1,034	41
Latin America	741	30

Source: FIAS (2008)

Employment in EPZs has increased substantially in developing countries: in 2002, it stood at an estimated 30 million in China and 13 million (up from 4.5 million in 1997) in other countries (ILO 2003a). By 2006, figures had increased to 40 million in China and 26 million elsewhere (Singa Boyenge 2007).

Table 4 shows the rise in employment generated in EPZs, as estimated by the ILO, giving a more detailed picture of employment by region. An extremely large proportion (63 per cent) of this employment is concentrated in China, although some of the zones in China are not necessarily for exporting. This share is, however, decreasing from 70 to 60 per cent. Only 0.05 per cent of employment in EPZs is in Europe. Clearly the importance of EPZs for employment is primarily in developing countries, especially Asia. This is likely to be explained by the number and size of EPZs in these countries, and also by the more labour-intensive sector composition of EPZs in these countries.

Table 4 Distribution of employment and EPZs by region

	Employment	Number of zones
Asia	53,089,262	900+
China	40,000,000	
Central America and Mexico	5,252,216	155
Middle East	1,043,597	50
North Africa	643,152	65
Sub-Saharan Africa	860,474	90+
United States	340,000	713
South America	459,825	43
Transition economies	1,400,379	400
Caribbean	546,513	250
Indian Ocean	182,712	1
Europe	364,818	50
Pacific	145,930	14
Estimated total	54,741,147	3,500+*

Note: *estimated by Singa Boyenge (2007). Source: Singa Boyenge (2007)

There is large heterogeneity regarding the importance of EPZs on employment levels within countries. Singa Boyenge (2007) suggests that in 2006, in addition to China, the countries with larger employment in EPZs were: Mexico (1,212,125); the Philippines (1,128,197); Vietnam (950,000); Sri Lanka (410,000); and Malaysia (369,488). In these countries, EPZs have reached more than 60 per cent of total manufacturing employment. In other countries – such as India or Indonesia – EPZs are more marginal, representing around one per cent of total employment (ILO 1988). The predominant sectors in EPZs are textile and clothing, and electronics, although there is no clear estimate of the importance of each for employment in EPZs, or more importantly, how this predominance has evolved over time.

While the increase in the number of EPZs and employment within them is well documented, it is less clear how much of this employment is additionally generated by EPZs. More importantly, especially during the 1990s, a significant number of studies and press reports started documenting problems with wages and labour conditions in EPZs. This generated a significant number of case studies analysing labour conditions within specific EPZs and a large policy and research programme by the ILO.

One ILO-commissioned survey (Milberg and Amengual 2008) analyses the evidence in relation to wages and labour conditions mainly from a set of ILO country case studies. Overall, the authors find that, although wages tend to be higher in EPZs than outside, EPZ workers face longer working hours and worse health conditions (albeit with better health benefits). They also find evidence in some countries and zones that: freedom of association rights are being violated; some specific elements of the labour laws are being derogated (for example, hiring laws in Togo); and that where labour laws are maintained, there are sometimes problems enforcing the law.

5. Study approach

This section discusses the approach used in the systematic review (appendixes A to D describe the methodology in detail). Appendix A describes the criteria for considering studies. The systematic review included only primary research studies that document issues relating to the following outcomes in EPZs in developing countries: additional employment; wages; working hours; freedom of association/right to unionisation; health and safety; and any gender-differentiated impact on these outcomes. Also, we focused on firms located in EPZs and not the impact on domestic suppliers to firms located outside the EPZ.

The searched studies were then filtered according to the following outcomes:

- **Employment:** studies that analyse additionality of either employment or investment, and those that discuss feminisation of labour in EPZs;
- **Wages:** studies that compare wages inside and outside the EPZ, or those that document the gender wage gap;
- **Working hours:** studies that document working hours and compare them with a counterfactual, for example maximum hours by law and firms outside the zone, and those that document outcome differences between men and women;
- **Freedom of association:** studies that document whether freedom of association is respected and whether workers are unionised, and studies that document outcome differences between men and women; and
- **Health and safety:** studies that document health and safety levels in the EPZ and compare them with workers' health and safety outside the zone, and those that document outcome differences between men and women.

Appendix B describes in detail the search methods used. In total we found 1,393 studies (1,080 unique references) out of which we included 59 in this review (see summary of searches in Figure 2: B1 in Appendix B). Some studies were included for multiple outcomes. We used the Evidence for Policy and Practice Information Centre Reviewer (EPPI-Reviewer) to manage the search and inclusion stage. The information in the included studies was then extracted to Excel according to Table 7: C1 in Appendix C, in order to undertake the synthesis.

The choice of an appropriate counterfactual is a critical factor in evaluating the impact of EPZ on employment outcomes. Wages or labour conditions may be higher or lower than an appropriate counterfactual comparison group. Where an inappropriate comparison group is used, the risk is that the outcome observed in the EPZ is caused by overall country market conditions and national labour institutions, rather than the effects of the EPZ itself. As a result, we assessed the appropriateness of counterfactuals according to risk of bias criteria, which we used as a quality indicator when synthesising the evidence (Appendix D). Appendix D also shows other important aspects considered for the quality assessment of included studies.

Sections 6 to 8 summarise the results of the review for employment, wages and working conditions. Section 9 presents implications for policy and research.

6. Impacts on employment

Most of the studies reviewed (both included and excluded) analyse the impact that EPZs have on employment. This is mainly done by calculating the amount of direct, and sometimes indirect, workers that are employed there. The ILO has been the main institution attempting to summarise this information to obtain global figures (ILO 1998, 2003a; Singa Boyenge 2007). Milberg and Amengual (2008) also provide a survey on the impacts of EPZs.

While the employment effects of EPZs in relation to the estimated number of people employed there are more or less clear (Tables 2 to 4), it is not obvious whether this employment is additional. Additionality of employment, however, is very difficult to measure empirically, given the lack of counterfactual data: it is hard to tell whether a company would have invested anyway, outside of the zone. There are also different levels of additionality. The first dimension is the issue of the additionality of investment – whether investment in the unit of production would not have occurred in the absence of the EPZ. A second dimension is related to additionality of employment: even if investment is additional, employment may be reallocated from outside to inside the zone, or between regions, with potentially zero net effect on overall employment if people were already employed elsewhere.

A few studies have tried to address the issue of additionality. While the methodologies used are imperfect and have some potential problems of robustness, we summarise these studies below and discuss their main methodological shortcomings.

6.1 Additionality of investment

Aggarwal (2007, 2010) attempts to address the issue of additionality of employment linked to whether investments are additional in Indian EPZs. Aggarwal (2007) emphasises two elements. First, investments in the EPZs are different from FDI outside the zone; the former has an export focus and the latter a domestic market focus. Second, given the poor investment climate in India, investment in special zones would not have occurred without incentives. Aggarwal concludes that the new investments in EPZs have created 687,565 new jobs – not significant nationally, but important for some local areas. She provides no evidence, however, about the extent of additionality and the role of EPZs in attracting this investment.

Aggarwal (2010) also looks in more detail at the issue of reallocation of investment in the zones in India, by quantitatively assessing the trends of industrial investment and units outside the special economic zones (SEZs). Aggarwal does not find any major changes in trend around the introduction and expansion of SEZs, and concludes that there is no evidence of reallocation. She does, however, find extensive barriers to entry and relocation to the zones, in terms of formal

documentation and the need for large production scale to operate in the zone.¹ This is reflected in a survey conducted among firms. Aggarwal concludes that the employment effect is likely to be additional, with a total of 490,358 jobs.

Clearly, evidence in this area is too thin to reach any conclusions, and the question of whether some of this FDI would have occurred without EPZ incentives is largely unanswered.

6.2 Additionality of employment

A different set of studies has focused on analysing the evidence around additionality of employment in relation to workers' reallocation. This involves analysing workers' previous occupation, either through surveys of EPZ workers to ask about previous occupations or by tracing the EPZ workers' migration flows into the EPZs.

Aggarwal (2007) suggests that the fact that most workers in India's zones are concentrated in the 20–29 years old cohort is evidence that EPZ workers are entering the job market and have no previous occupations, which is an indication of additionality to net job creation.

Yonghong (1989) uses a survey of workers in China to analyse their previous occupation and finds a mixture of results: 54 per cent were previously working (38 per cent in factories; 16 per cent on farms) and 46 per cent were not working previously (14 per cent were waiting for a job). This indicates a mixture of jobs being reallocated and workers entering the labour market.

Zohir (2001a) also finds evidence of job reallocation from outside to inside the EPZ in Bangladesh. Around one-third of female workers and two-thirds of male workers were employed prior to their employment in the EPZ, mostly in the garment industry outside the zone. Zohir finds a high degree of reallocation for men attracted by greater contract security inside the EPZ.

One important point to highlight is that even if worker reallocation occurs, in order to determine the additional impact on net employment, we would need to determine what happens to the job vacancies left outside the zone.

A second set of studies has focused on the migration flows of EPZ workers. Aggarwal (2007) finds that only 20 per cent of workers migrated to the zones, indicating no major rural-to-urban reallocation of workers. Zohir (2001a) finds a different picture for Bangladesh: about 72 per cent of female and 68 per cent of male workers were migrants, and migrants made up a larger proportion in non-garment sectors.

¹ The issue of scale and the fact that most EPZs have restrictions on the minimum share of production that needs to be exported indicate that domestic firms may reallocate to EPZs if they experience significant growth in exports. However, some countries such as Brazil do not allow reallocation of domestic firms to EPZs to avoid disputes among different states.

Table 5 Summary of papers on additionality

Authors	Description	Additionality
Aggarwal 2007	On <i>investment</i>: • different focus between FDI inside and outside zone • large investment climate problems for attracting investment outside the zone • employment likely to be additional – 687,565 new jobs. On <i>employment</i>: • most workers are in the 20–29 age cohort, which for the author is indication of entering the labour market for the first time • only 20% of workers migrated to the zones, indicating not major rural-to-urban reallocation.	Investment, employment India
Aggarwal 2010	The author looks at the issue of reallocation of investment in the zones by quantitatively assessing the trends of industrial investment and units outside SEZs. She finds: • no major changes in the trend around introduction and expansion of SEZs • high barriers to entry in terms of formal documentation and the need for scale • employment likely to be additional: 490,358 new jobs.	Investment India
Sanders and Brown 2012	The authors analyse the issue of additionality in a different way. They employ a Harris–Todaro model, where population redistribution increases the pressure on urban labour markets to integrate a growing number of potential workers. In their model, rural employed people move to better-paid urban jobs. They use geospatial data for the Philippines and find high levels of rural-to-urban migration between 1995 and 2005 in regions where the PEZA and BCDA programmes have produced the most jobs, and find that these same regions have seen higher-than-average increases in unemployment, despite the large number of jobs created by PEZA and BCDA. This would suggest a negative additional impact of EPZs on employment; a critical assumption is that people are employed in rural areas.	Employment, migration Philippines
Yonghong 1989	The author uses a survey of workers to find that in China most EPZ workers (54%) were previously employed in factories or on farms. However, a significant number of workers (46%) were either not working or waiting for a job.	Employment China
Zohir 2001a	On <i>employment</i>: The author traces workers' status and migration prior to the EPZ job. Around one-third of female workers and two-thirds of male workers were previously employed, mostly in the garment industry outside the zone. To a high degree, reallocation for men was based on contract security; this is less the case for women. On <i>migration</i>: The author finds that 72% of female and 68% of male workers were migrants. Migrants make up a larger share in non-garment sectors.	Employment, migration Bangladesh

As before, whether migrants or not, one needs to consider the previous occupation of workers in rural areas to determine the effect on net employment. However, an important new dimension to this issue is provided by Sanders and Brown (2012), who suggest that migration associated with EPZs can negatively contribute to net employment if migration flows cannot be absorbed. The authors use a Harris–Todaro model, where population redistribution increases pressure on urban labour markets to integrate a growing number of potential workers. In their model, rural employed people move to better-paid urban jobs. They use geospatial data for the Philippines and find high levels of rural-to-urban migration between 1995 and 2005 in regions where the Philippine Economic Zone Authority (PEZA) and the Bases Conversion and Development Authority (BCDA) programmes have produced most of the jobs.

They also show that these same regions have seen higher-than-average increases in unemployment, despite the large number of jobs created by PEZA and BCDA. They conclude that if large migration flows are attracted by the EPZ and this cannot create enough employment to absorb this labour surplus, EPZs contribute negatively to net employment. The main assumption of the authors, however, is that most of these surplus migrants were employed before migrating, which is likely not to be the case.

In general, the few studies reviewed suggest that EPZs absorb both existing workers and new workers entering the labour market. Overall, this suggests that, while not all employment in EPZs is additional, a significant part is likely to be so, with new entrants to the labour market including those who fill the vacancies left by reallocated workers. A critical element here is the skill intensity of workers: EPZs with more skill-intensive sectors are more likely to reallocate existing workers from similar sectors, while zones with low-skill-intensive sectors are more likely to employ new entrants. The evidence of Sanders and Brown (2012), however, also suggests that, where pull factors on migration flows are very strong, EPZs can create significant regional unemployment. This may be more important in downturn periods.

6.3 Employment and gender

We analysed three different elements with regard to employment and gender. First, the hypothesis of feminisation of EPZs: whether female employment dominates in EPZs. Second, whether feminisation is not simply a sector composition effect. We compared female employment shares inside and outside the EPZ to ascertain whether sectors in the EPZs are traditionally more female-intensive than sectors outside. Finally, we reviewed some of the evidence on whether EPZs increase women's labour participation.

Table 8: E1 in Appendix E also summarises the studies reviewed. Regarding the feminisation of labour in EPZs, most of the studies reviewed indicate greater female than male employment: Cling *et al.* (2005, 2007) and Glick and Roubaud (2006) for Madagascar; Dunn (1999) for Jamaica, Barbados and Belize; Mathews (1994) and De Moya (1986) for the Dominican Republic; and Alvarenga and Ligia (2001) for El

Salvador. Aggarwal (2007) for India, and Fu and Gao (2007) for China, find more male employment in EPZs; while Blanco de Armas and Sadni-Jallab (2002) find similar proportions in Mexico.

These results are consistent with Farole and Akinci (2011), who use secondary data to find that, while female shares dominate employment in most countries, there is significant heterogeneity regarding feminisation, with female shares ranging between 20 per cent in Morocco and 85 per cent in Jamaica and Nicaragua. Feminisation dominates in light industries, such as garments, electronics and textiles, while the female share of employment is reduced significantly in chemicals, wood products and metals.

Studies with some counterfactual comparison, but low-quality comparison and higher risk of bias

In order to analyse whether this feminisation of employment effect is the result of the specific sector composition of activities within the zones, we also reviewed the evidence of studies that compare female participation inside and outside the zone. EPZs tend to employ more women than sectors outside the zone, with Farole and Akinci (2011) suggesting that, for various countries, EPZs have almost doubled the female share of non-agriculture sectors. Fu and Gao (2007) report around 10 per cent in China. Alvarenga and Ligia (2001) and Cling *et al.* (2005, 2007) find more female employment in EPZs than in private sector firms outside of EPZs and in government in El Salvador and Madagascar. The problem with these studies is that the comparison is carried out between different sectors of activity; they therefore suggest that feminisation can be a sector location issue. The difficulty in determining the additional feminisation effect of EPZs is that in many developing countries the sectors of activity inside and outside EPZs are significantly different.

Studies with higher-quality counterfactual and lower risk of bias

We found, however, one study by de Moya (1986) which compares the same sub-sectors within manufacturing in the Dominican Republic and finds a much larger female employment share in EPZs. This could be evidence that, in addition to sector composition, EPZs tend to employ more women; however, we need more evidence from other countries to fully test this hypothesis.

EPZs and female participation rates

Finally, some studies analyse whether EPZs increase female participation in the labour market, mainly using surveys to ask women about past occupations. Yonghong (1989), Zohir (2001b) and Hein (1984) all find evidence of women entering the labour market via EPZs in China, Bangladesh and Mauritius respectively.

In summary, the evidence reviewed gives some support for the hypothesis that EPZs feminise labour. Most EPZs tend to employ more women than men, although there is significant heterogeneity across countries. This is mainly the result of the sector composition of EPZs, which tend to be more female-intensive; although we found one study suggesting that even when comparing the same sectors EPZs employ more women. The studies reviewed suggest that EPZs contribute to increasing female participation in the labour market.

7. Impacts on wages

In some countries, trade unions and civil society have frequently criticised EPZ firms for derogating on minimum wages, failing to monitor labour laws or using their bargaining power to pay lower wages than they would pay outside the zone. In this section, we review this issue and the evidence in relation to the impact of EPZs on wages. This information is summarised Table 8: E2 in Appendix E.

The main challenge in determining whether workers are paid less within the zones is the choice of an appropriate counterfactual; this is what the workers would get paid for doing the same activity outside the zone. This can be especially challenging in cases where specific sectors are only located in EPZs. As a result, the methodologies used in most included studies are based on some comparison between average wages inside and outside the zone. This is problematic since different sectors tend to pay different wage levels.

A few studies compare wages inside and outside the zone for the same sectors. These studies are considered to be of medium quality since they provide better comparison groups, but fail to control for other external factors that may be affecting wage differences. A final set of studies uses econometric techniques to estimate the wage premium associated with EPZs in earning equations. The main advantage of these studies is the control for the individual workers' levels of skill and other external factors. These studies are considered to be of high quality and to have a lower risk of bias. One problem, however, of this last type of study is that the wage premium is often compared with different sectors in the economy – such as the public sector, other private sectors or the informal sector. This implies that even these studies with a lower risk of bias are unable to provide a clean wage premium associated with EPZs, since they compare sectors with different productivity and wage levels.

A final set of studies approaches the issue of wages by comparing the wages of EPZ workers before and after they start working there. The problem with these studies is that, as suggested above, many of the workers who migrated from rural areas either had no occupation or worked in other sectors. In these cases, wage differences are not a clear indication of the wage premium, unless workers were reallocated from the same sector outside the zone. These studies are also labelled as low quality, with a higher risk of bias.

7.1 Wage results synthesis across all studies

Although there is heterogeneity of results across all the studies, more indicate that EPZs pay higher wages. These include: ILO (2001a, 2001b) for a survey on 100 countries; Fu and Gao (2007) for China 1995–2005; Abeywardene *et al.* (1984) for textiles in Sri Lanka; Aggarwal (2007) for Noida, Madras and SEEPZ in India in 2001; Bhattacharya (1998) and Kabeer and Mahmud (2004) for Dhaka EPZ in Bangladesh; Chant and McIlwaine (1995) for Mactan EPZ, and Castro (1982) for Bataan EPZ in the Philippines; Sivalingam (1994) for Malaysia; Wu (1985) and Yonghong (1989) for Guangdong and Shenzhen in China.

Five studies find that lower wages are paid in EPZs. These include Fussell (2000) for Tijuana, Mexico, in 1993; Hein (1988) for apparel in Mauritius 1973–1986; Mireri (2000) for Kenya; Possas *et al.* (1987) in the electro-electronic sector for Brazil in 1981 (although comparing very diverse regions), and Sen and Dasgupta (2008) for West Bengal, Delhi, Haryana, Gujarat and Maharashtra in India in 2004–2006.

Other studies, however, present a more mixed picture. Zohir (2001b) for Dhaka EPZ in Bangladesh finds higher wages for women but lower for men, compared with firms outside the zone. Glick and Roubaud (2006) find wages in Madagascar’s EPZ to be higher than those in the informal sector, but lower than those in other private sectors. Warr (1987) finds the same wage for low-skill workers inside and outside the zones in the Philippines, and higher wages inside for skilled workers. Finally, Cling *et al.* (2005, 2007) find a wage premium associated with EPZs that is no different from that in the formal private sector and is higher than that in the informal sector.

Higher-quality studies, better use of counterfactual and lower risk of bias

It is difficult to reach a final conclusion regarding the wage premium associated with EPZs. Looking only at those higher-quality and medium-quality econometric studies (Cling *et al.* [2005, 2007]; Fussell [2000]; Kabeer and Mahmud [2004]; and Glick and Roubaud [2006]), it is clear that EPZs pay better than the informal sector, but when comparing with the formal sector, results are inconclusive.

In general, the results suggest significant heterogeneity in relation to wage differentials between firms inside and outside the zones. In most cases, firms in EPZs tend to pay higher wages, but there are some cases where there is evidence of the opposite. Two studies that documented wages for workers before and after entering the zone suggest that workers earn more in the EPZ; but it is likely that these workers were involved in different activities prior to working in the zone.

A final element that we have analysed in relation to wages is the impact of EPZs on the wage gap between males and females. For the Dhaka EPZ in Bangladesh, Zohir (2001a, 2001b) documents a larger wage gap within the zones, although this is similar to factories outside the EPZ. Joeques (1987), Soni-Sinha (2010) and Hein (1984), on the other hand, find that EPZs in the Dominican Republic, Uttar Pradesh (India) and Mauritius show no impact on the gender wage gap – if anything, the gap is smaller in the zones.

8. Impacts on labour conditions

There is a significant amount of anecdotal evidence suggesting that the violation of labour rights and poor labour conditions are associated with sweatshops, some of which may be located in EPZs. In this section, we review the evidence in relation to labour conditions in EPZs.

As for previous labour outcomes, it is important to compare labour conditions inside and outside the EPZs. Sometimes, however, EPZs have special law derogations that may be used by firms inside the zones to apply lower labour standards. Although these cases may signal a different impact of EPZs on labour conditions, we cannot be

sure whether labour conditions are better outside the zone unless there is some formal comparison.

We focused the analysis on three elements of labour conditions: unionisation, health and safety, and working hours.

8.1 Unionisation

Starting at the policy level, there is evidence that union rights have been legally constrained or *de facto* discouraged in EPZs. Dunn (1999) suggests that unionisation in EPZs is discouraged in Jamaica, Barbados and Belize. Gopalakrishnan (2007) finds that restrictions on unions' rights are widespread in various countries, with examples of legal restrictions on unionisation in Bangladesh, Namibia, Pakistan, Nigeria, Togo and Colombia, and on industrial action in Bangladesh, Namibia, Nigeria, Pakistan, Sri Lanka, the Philippines, Turkey and India. Gopalakrishnan also finds: interference in the affairs of workers' organisations in Bangladesh, Sri Lanka and Nicaragua; anti-union discrimination in the Dominican Republic, Costa Rica, Dominican Republic, India, Nicaragua, Sri Lanka, Guatemala and the Philippines; and action against collective bargaining in the Dominican Republic, the Philippines, Sri Lanka, Malaysia, India and Nicaragua.

Other studies providing evidence of union rights violations are: ICFTU (2003), in Bangladesh, the Philippines, Lesotho, Sri Lanka and China; and ILO (1996) in Central America and the Dominican Republic during the 1990s. These are confirmed by the ILO global surveys (2001a, 2001b), although these global studies also document cases where the right of unionisation is respected in many EPZs.

There are two problems with the previous evidence. First, union rights violations may also prevail outside the zone, and therefore, rather than being an EPZ-related issue, it is a country-wide problem. For example, ILO (2003b) documents problems of unionisation within the zones in the Philippines, but also argues that unionisation problems are common in factories outside the zone.

Second, workers in EPZs may have different preferences in relation to becoming unionised. Bellman (2004) uses an econometric model to explain unionisation among EPZ female workers in Nicaragua and Honduras in 2000–2001, finding that length of employment is the main variable explaining unionisation among workers: more experienced workers were more likely to be unionised. In a survey in Honduras in 1998, Ver Beek (2001) finds that most EPZ workers who are not unionised either do not like unions or fear that unions in the zone may bring problems with the management. These studies suggest that, even when unionisation is allowed, workers may opt not to be unionised due to personal preferences or negative expectations.

Looking at studies that compare unionisation rates inside and outside the zone, four find higher unionisation inside the zones, two find very similar levels and two find less unionisation. Starting with studies that find more unionisation, Cling *et al.* (2005) and Glick and Roubaud (2006) for Madagascar, find more unionisation in

EPZs than in the private sector outside, although the authors compare different sectors of activity. Mireri (2000) also finds more unionisation inside the EPZ, even when unionisation is effectively discouraged there. Kabeer and Mahmud (2004) also find more unionisation inside the zone when they compare the garment sector in and out of the EPZs in Dhaka and its peri-urban outskirts in 2001. Nevertheless, figures were very low for both – five per cent compared with one per cent.

Both ILO (1988) and Sen and Dasgupta (2008) find very similar unionisation rates between firms inside and outside the EPZs in some Asian countries in the early 1980s and in India in 2004–2006. Ver Beek (2001) finds less unionisation inside the EPZs in Honduras in 1998, while Zohir (2001a) suggests that unionisation is banned inside Bangladesh's EPZs, but not outside.²

In general, the results suggest that there is a significant amount of factual evidence documenting restrictions to unionisation inside the EPZs, either via limits on rights or by *de facto* constraining these rights. However, when looking at the evidence of studies that compare firms inside and outside the zones, the results suggest that in a majority of cases, unionisation in the zone is slightly higher than, or similar to, firms outside the zone. Therefore, excluding those cases where unionisation is restricted by law in EPZs, we cannot conclude whether restrictions on union rights can be attributed to EPZs or to general failures in domestic labour institutions.

8.2 Health and safety

In this section we summarise existing evidence in relation to health and safety. Most of the literature reviewed focuses on health, rather than safety issues. However, a few studies also document safety issues in EPZs, and many safety problems are translated into a higher prevalence of illness in the zones.

In terms of the literature, we can divide the included studies into those that: focus on documenting health and safety outcomes in EPZs, but do not compare this with conditions outside the zone; look at different health outcomes for males and females within zones; look at the main factors that increase health problems in the zones; and compare health outcomes inside and outside the zones. We use this order to synthesise the evidence.

Studies that document health and safety outcomes in EPZs

A significant number of studies use anecdotal evidence about specific problems occurring in EPZs or different incentives or regulations for EPZs: ICFTU (2003) documents derogations on health and safety standards in EPZs in Bangladesh and Kenya; ILO (2001a, 2001b) find cases of problems in ensuring health and safety standards in countries such as Kenya and the Philippines; ILO (2003a) documents problems with enforcing health and safety standards within EPZs in Kenya and Togo. The problem with these studies, however, is the lack of information on health and safety issues outside the zones.

² This contrasts with Kabeer and Mahmud (2004), also for Bangladesh, although both studies look at different periods.

Some studies have analysed health issues within EPZs using more detailed workers' surveys: Lu (2009) finds high rates of sickness absenteeism and problems with health and occupation in EPZs in the Philippines, while Moure-Eraso *et al.* (1997) also find high prevalence of health problems in EPZ workers in Mexico.

Regarding the main factors that create health problems in EPZs, Del Prado-Lu (2008) finds in a qualitative survey for the Philippines that health workers and supervisors are affected by organisational and management factors as expressed by the perceptions of workers. Lu (2008) uses an econometric methodology to test some of the factors that affect health problems in an EPZ in the Philippines. Using a logistic regression controlling for other factors, the author finds, for example, that noise was found to be associated with hearing loss and that chemicals, dust and poor ventilation were related to headaches. A final study analysing the factors affecting health outcomes in EPZs is Wang *et al.* (2002), which uses a randomised controlled trial to compare electronics workers in Taiwan working in clean rooms with those working in normal rooms; the authors find a higher prevalence of urinary tract infection in clean rooms within zones.

Differences in health outcomes between men and women within EPZs

A different set of studies analyses different health outcomes between men and women working in EPZs. Khan *et al.* (2010) uses a survey of EPZ workers in Hayatabad Industrial Estate, Peshawar (India) to find that female workers experience a higher prevalence of mental health disorders than male workers. Del Prado-Lu (2008) also finds a higher incidence of illness among women workers in the electronics and garment industries in EPZs in the Philippines in 2002–2006. Finally, Zohir (2001b) analyses illness incidence in garment EPZs in Bangladesh and finds that this was higher for female than male workers in 1990 and 1997 for almost all types of illness (including coughs, colds and headaches). The results also show a higher prevalence of work-related illness. Some of this higher illness incidence in women is associated not only with the different activities men and women carry out in the zone, but also with their different roles within the household.

Studies comparing health outcomes inside and outside EPZs

Clearly, the evidence reviewed so far indicates significant health and safety issues related to EPZs. However, it is important to determine whether these health and safety issues differ from those found in firms outside the zone. A final set of studies compares health issues between workers inside and outside the zone.

Low-quality studies with higher risk of bias

Starting with studies with a higher risk of bias due to using aggregate information or very small surveys, Zohir (2001b), reviewed above, finds that the incidence of illness is lower for male workers in EPZs, compared with those outside the zone, and similar for female workers. Botchie (1984) argues that in Liberia and Ghana firms inside EPZs provide more health benefits than firms outside, but the author does not provide any evidence of health impacts. Attanapola (2005) finds that women workers in Sri Lankan EPZs experience worse health outcomes than they had done in their previous jobs. It is unclear, however, whether previous occupations were similar to the garment, shoe and toy industries in the zones; and it is likely that most of these

women migrated from rural areas. Ver Beek (2001) uses a survey from Honduras comparing people employed in the EPZs with those who have applied to work there, and finds that 44.6 per cent of women and 51.6 per cent of men in EPZs had health problems in the previous months compared with 7.1 per cent of women applicants and 11.3 per cent of total applicants. Again, the previous activity of applicants is unclear; some of them may have been out of the labour market or engaged in less hazardous activities.

Higher-quality studies with a lower risk of bias

A final set of studies has used more representative surveys to compare health outcomes inside and outside EPZs. These are surveys designed to determine differences in health outcomes, especially for women. Liberato and Fennell (2007), using a survey of women in the Dominican Republic, find that working in EPZs negatively affects health and increases the likelihood that women will be hospitalised. One important element to consider is the fact that around 81 per cent of female workers in EPZs are in textiles and clothing, so the sector of activity composition between women inside and outside the zone is very different. Paradoxically, the authors also find that, while EPZs negatively affect women's health, they also improve health outcomes in the household via better health benefits or the use of preventative medicine.

Two further studies reviewed compare women working in EPZs and in other activities in Tijuana, Mexico. Guendelman and Silberg (1993) find the *maquiladora* [EPZ] has no impact on women's depression or control over life, compared with other activities. Similarly, Hovell *et al.* (1988) find no morbidity differences between women working in the *maquiladora* and other sectors.

The studies reviewed, therefore, suggest a mixed picture. While significant health and safety issues in EPZs have been documented in the literature – ranging from anecdotal evidence to more robust studies – the few studies reviewed comparing workers inside and outside the EPZs show conflicting results. Furthermore, the evidence reviewed does not provide any information on whether the cases of higher prevalence of illness in the zones are explained by the location of sectors with more illness prevalence.

8.3 Working hours

Several studies found in the literature document very long working hours in EPZs. Hancock *et al.* (2009) finds a high incidence of overtime working in EPZs in Sri Lanka. This, however, does not violate national legislation. Castro (1982) finds that in 1980, 43 per cent of workers in the Philippines Bataan EPZ worked overtime; the average week was 53.9 hours, exceeding the standard 48-hour week. Ford (1984) also finds evidence of overtime work in EPZs in Korea, Malaysia, the Philippines and Sri Lanka. Other studies showing evidence of overtime work in EPZs are: Yonghong (1989), who finds that 43 per cent of workers in Chinese EPZs are working 71–80 hours; Lu (2009), who finds that 60.6 per cent of workers in EPZs in the Philippines are working for more than eight hours a day; ICFTU (2005) and ILO (2001b) show anecdotal evidence of long working hours in EPZs in Jordan and Mauritius

respectively. None of these studies, however, compare overtime work between EPZs and other firms in the country.

Studies comparing working hours inside and outside the EPZ

Those studies that do compare working hours inside and outside the zones show mixed results: three find shorter working hours in the zones; two find very similar conditions; and another three suggest longer working hours in the EPZs.

Among the studies that document shorter working hours in the EPZs, Alvarenga and Ligia (2001) find that 50 per cent of EPZ workers in El Salvador work 47 hours per week, while the average worker's week is 49.61 hours outside the EPZ, and 47.82 hours in the textile industry. Kabeer and Mahmud (2004) find that only 30 per cent of EPZ workers in Bangladesh work more than 10 hours a day, compared with 72 per cent in the Dhaka garment factories. Finally, Mireri (2000) finds that 10 per cent of EPZ employees and 18 per cent of non-EPZ employees in Kenya work more than 49 hours per week.

In addition, Aggarwal (2007) suggests that, in 2001, the majority of Indian EPZ workers were within the legal limit of 48 hours per week or nine hours per day. Botchie (1984) suggests that the EPZ working hours guidelines in Liberia and Ghana are the same as those for other firms in the economy, but does not provide any information on whether the guidelines are followed in practice.

There are three studies that document longer working hours inside the zones. Cling *et al.* (2005) suggests that EPZ workers in Madagascar work an average of 53 hours per week, while other industrial private sector workers outside the zone work an average of 44 hours. Also in Madagascar, Glick and Roubaud (2006) calculate average monthly working hours in different sectors as follows: 161 in the public sector; 172 in public enterprise; 187 in the private sector; 211 in EPZs, and 180 in the private informal sector. In India, Sen and Dasgupta (2008) calculate that EPZ workers in West Bengal, Delhi, Haryana, Gujarat and Maharashtra work on average 0.48 hours a day more than their non-SEZ counterparts.

8.4 Compulsory and underpaid work

While the number of hours worked are important to determine excessive work, two critical elements for labour conditions are: whether overwork is compulsory, and whether it is unpaid. EPZ firms may have larger business volumes than their non-EPZ counterparts, and it is possible that EPZ workers may voluntarily overwork in order to obtain higher salaries. However, if workers are forced to do overwork and/or they do not get paid for it, this has a negative effect on labour conditions.

Several studies document compulsory overwork in EPZs. Hein (1988) and ILO (2001b) suggest that there is compulsory overwork in the apparel EPZ in Mauritius, and Yonghong (1989) suggests the same applies to Shenzhen EPZ in China. There is some anecdotal evidence of workers having problems getting paid for overtime work (ILO 2001a), but we could not find many studies that documented these problems.

Overall, the evidence suggests that, while long working hours appear to be a common element of many EPZs, comparisons with working hours outside the zones are mixed. There is, however, evidence that in some countries overwork is compulsory, violating labour rights, and anecdotal evidence suggests that in some cases overwork is not appropriately remunerated.

9. Sensitivity of impacts to context and time period

The evidence reviewed from included studies shows mixed results, which makes it very difficult to generate major findings on the impacts of EPZs. Moreover, there is one potential source of bias in this literature, since the motivation of some of the studies is to analyse cases where there has been some discussion of labour outcome problems. This has clearly come out very strongly in our review, and is likely to bias the number of studies towards those that document negative outcomes. The concentration of studies in some countries is likely to be a result of the importance of the EPZ sector and the data available. There is also the possibility that researchers are more likely to analyse labour market outcomes in EPZs where there has been anecdotal evidence of problems; however, this is difficult to demonstrate.

The only way of addressing this bias is by randomly evaluating different EPZs, but to our knowledge this has not been done. There are a few global surveys (such as ILO 2001a, 2001b) that survey across most countries and EPZs. The problem with these surveys is that they are based on a questionnaire to a few important actors – such as trade unions, government officials and EPZ managers – and do not use harmonised and representative worker surveys. It is therefore possible that the bias towards negative outcomes arises from a lack of representation of EPZs with less anecdotal evidence of labour disputes.

Keeping this caveat in mind, in this section we attempt to handle the heterogeneity of results by analysing this in relation to sector, country or region and period. The idea is to analyse whether better or worse outcomes tend to be concentrated in specific sectors, specific countries or in given time periods.

Tables 13: F1 and 14: F2 in Appendix F summarise the heterogeneity results. We focus on those studies that establish some comparison between outcomes inside and outside the zone. For those, we summarise whether the outcome is higher or lower in the zone, the period of study and the country.

9.1 Sector analysis

The first element that emerges from the tables is the extremely large representation of the clothing and apparel sector in included studies. This is interesting since the inventory of existing EPZs presented in Singa Boyenge (2007) suggests much more sector diversification in existing EPZs, and raises the question of whether this sector is more prone to potential labour outcome problems. However, looking at the relationship between sector and impact on labour outcomes does not suggest any clear links. Wages and labour conditions can be better or worse inside the EPZ than

outside for all sectors; and no single sector appears to have a larger prevalence of negative labour outcomes.

One problem, however, of the sector analysis is that we cannot analyse the evolution of sector composition within EPZs over time. While in some countries EPZs are very much focused on pure assembly sectors, others have changed the sector composition towards services or more skilled sectors. Even within sectors, the way processing is carried out has changed substantially in the last 20 years. This includes increasing quality requirements and, more importantly, raising the standards with which firms need to comply within value chains. In this context, it is difficult to assert whether some of the findings of the early literature in the 1980s and 1990s are still relevant.

9.2 Period analysis

As a result, we also compare whether the incidence of negative labour outcomes in EPZs is larger in the 1980s and 1990s. In addition to the changes in production and the adoption of private labour standards described above, there has been substantial pressure on multinational enterprises (MNEs) to raise labour standards and increasingly adopt and be aware of ILO labour conventions. The results, however, show that there is no indication that labour outcomes are better in the 2000s than in the previous two decades.

9.3 Country and region analysis

When analysing the concentration of findings in specific countries and regions, four important elements arise. First, most of the included studies that used comparison groups, tended to concentrate on a dozen countries, as did most of the studies that came up in our searches. There has been more research done on EPZs in Bangladesh, Sri Lanka, Mexico, the Philippines, the Dominican Republic, Madagascar and Mauritius. Although EPZs are relatively important in these countries, there are other countries, such as Malaysia or some countries in North Africa, where EPZs are important, but have been less scrutinised. This could be related to the non-randomness of the studies analysed. Second, there are a few cases where studies that analyse the same outcome and the same country suggest slightly different results. This applied to India, Madagascar and the Philippines for wages; Bangladesh for unionisation; and India for working hours. This may be the result of different periods of analysis, but is more likely due to different comparison groups. Third, there is no clear region where labour outcomes appear to be more negative than others. Fourth, there are a few countries, including Madagascar, the Philippines and China, where none of the included studies suggest any negative impact on labour outcomes in EPZs compared with firms outside the zones. Furthermore, no country with more than one evaluation has only negative labour outcomes inside the EPZ compared with firms outside.

Therefore, the results of the heterogeneity analysis are difficult to interpret. We need to be cautious, given that the number of included studies with comparison groups inside and outside the zones is very small. The concentration of studies in the clothing sector and in a dozen countries is striking. This is difficult to explain using

only criteria of employment or production. In addition, there is no clear association between the sector or period of analysis and the labour outcome. This suggests that labour outcomes may depend on other factors, such as labour market institutions or the degree of enforcement of labour laws. Finally, of the countries analysed, there are a few where EPZ labour outcomes are always positive in relation to firms outside the zone. This, combined with the possibility that the concentration of evaluations on a dozen countries is based on a selection formed from previous anecdotal evidence of labour disputes, would indicate that in most countries, EPZ labour outcomes are no worse than those outside the zones. This is, however, speculation, since we do not have enough information to assess why some countries have been researched more than others. Nor do we have enough information about whether countries where EPZs have not been evaluated are free from labour disputes.

10. Implications for policy and practice

This systematic review has analysed the evidence in relation to the impact of EPZs on employment, wages and labour conditions in developing countries. This section presents implications of the review for policy and practice and implications for research.

Before summarising the main conclusions, it is important to stress two important limitations of this review. First, given the lack of available data, we have compared EPZs across countries as a single homogenous intervention. As suggested in Section 2, different EPZs have different instruments, which can have different impacts on labour outcomes, if effective. Second, the lack of an appropriate counterfactual in study designs also limits the robustness of the results. This lack of a counterfactual is not only the result of lower-quality study designs. In some countries, the type of firms and sector composition inside the zones may be significantly different from firms and sectors outside the zone.

With these caveats in mind, we summarise the main conclusions of this review in Table 6. For employment, the review of the literature does not successfully address whether the employment created in EPZ is additional. However, it is likely that a significant share is additional, since in some countries EPZs employ a considerable number of new entrants to the labour market, and there is no evidence of plants reallocating from outside to inside the EPZ. Nevertheless, we must stress that this conclusion is tentative, since we were unable successfully to address the issue of whether investments would have taken place in the absence of the EPZ. Furthermore, this review finds some weak support for the idea of feminisation of the labour force in EPZs – although this is difficult to disentangle from the sector composition of EPZs – and a positive impact of EPZs on female labour participation.

We have also analysed the evidence on the impact on labour conditions. Some studies identify specific restrictions on unionisation and labour rights in some EPZs. However, in those cases where unionisation is not restricted by law, unionisation rates are sometimes greater and sometimes lesser than they are in other firms outside the EPZ. We therefore cannot conclude whether restrictions on union rights should be attributed to EPZs or to general failures in domestic labour institutions.

Table 6 Summary of findings

Outcome	Nature of evidence	Impact
Additionality of employment	Hardly any literature exists. Existing study designs on employment do not successfully address the issue of additionality.	Lack of evidence in this area. Some evidence suggesting lack of reallocation of firms from inside to outside.
Feminisation of labour force	Some literature exists, but there is little evidence using appropriate counterfactual.	Some evidence supporting feminisation of labour force, but difficult to disentangle from sector composition effects.
Wages	Some literature exists, mainly without appropriate counterfactuals, although there is some literature controlling for individual characteristics.	Inconclusive. Heterogeneity of results depending on the zone. In some case wages are higher and in some cases they are lower. Gender wage gap also present.
Unionisation	Some literature exists in this area, but mainly without appropriate counterfactuals.	Unionisation banned by law in some EPZs. Inconclusive evidence when comparing unionisation inside and outside zones.
Health and safety	Very thin literature, but some studies have appropriate study designs.	Evidence of health-related issues in some zones. Evidence mixed when comparing with workers outside the zones.
Working hours	Thin literature with appropriate study design.	Evidence of long working hours in EPZs. Inconclusive evidence when comparing with workers outside the zones.

The evidence on health and safety issues is mixed when compared with workers outside the EPZ. Despite potential health problems in the EPZs, workers inside the zones do appear to have better health coverage.

In relation to wages, there is significant heterogeneity of results across countries. In most case studies, wages are larger within EPZs, and although the male–female wage gap prevails within the zones, it is not larger than for other firms.

Finally, the evidence on working hours suggests that long working hours are common in EPZs. There is evidence in some cases that this is compulsory and unremunerated. However, when comparing working hours with other firms outside the EPZ, the evidence is mixed.

The main implication of these results is that, in some cases, negative labour outcomes appear to be the result of regulation derogations or of a lack of law enforcement capacity in the country, rather than issues specific to EPZs. If this is the case, countries should attempt to implement and enforce labour rights and international labour standards so as to minimise negative labour outcomes. The process of EPZ companies adopting private standards is also likely to facilitate better labour outcomes, although evidence in these areas has not been reviewed in this report. While moving away from assembling sectors may also minimise the risk of negative labour outcomes, the findings of the review suggest, especially for the clothing sector, that the main negative labour outcomes appear to be associated with derogations or a lack of enforcement of domestic labour laws.

11. Implications for research

It is difficult to draw lessons for policy and practice, given the heterogeneity of results, but there are some strong conclusions arising from the quality and methodological appropriateness of the evidence reviewed. The main implication for research is the need for more primary research studies that use significantly improved study design and methodologies, particularly regarding the appropriate use of counterfactuals.

1. The issue of additionality has not been adequately addressed, despite the fact that there are some attempts to do so found in the literature. This is important, given the costs associated with EPZs in terms of subsidies and distortions, which are likely to depend on the type of investment attracted and how this relates to a country's sources of comparative advantage.
2. In some of the studies, it is likely that the motivation to focus on specific EPZs arose from previous controversies about labour issues. As a result, EPZs without labour disputes may be underrepresented and the findings may be biased towards more negative outcomes.
3. Case studies analyse labour outcomes in a given period. However, the issue of labour outcomes in EPZs is dynamic and likely to be influenced by changes in production processes, sector composition or the adoption of private or ILO standards. As a result, it would be interesting to update some of the studies to determine their current relevance.
4. Most of the evidence analysed is not able to successfully differentiate between the EPZ and the sector composition effect on labour outcomes. This is a challenge in some countries where some sectors are specific only to the EPZs. Without a clear distinction, we cannot correctly identify where the effect is solely attributable to EPZs.
5. Related to the previous point, most of the evidence fails to compare labour outcomes inside and outside the zone adequately. Labour outcomes should be compared when possible within the same sector and even within the same firm size. Without this, the effect of domestic institutions cannot be differentiated from the effect of EPZs.

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Appendix A: Criteria for considering studies for this review

We included studies that analyse the impact of EPZs on labour market outcomes in developing countries. We excluded studies that look at the impact of incentive zones in developed countries. We also excluded studies that look at the impact of EPZs on exports, linkages, spillovers or investment. Although these elements are important when determining the effectiveness of an EPZ, these are out of the scope of the review. Finally, we also excluded studies assessing the relation between exporting and FDI processes and labour outcomes that do not focus on assessing EPZ interventions.

Regarding the intervention, we treated all EPZs as a similar intervention. Quantifying the incentives and types of intervention would require a complete inventory of all instruments used by all EPZs included in the analysis during the period of analysis, which is impossible to achieve given the resources available. More importantly, it would require quantifying the degree of implementation and effectiveness of such measures, and the costs of implementation, which is not possible given the existing data availability. This caveat, therefore, needs to be kept in mind when interpreting the results.

Regarding the methodologies to be included in the review, we implemented a variable approach according to the outcome variables to be analysed. The theoretical frameworks surveyed above give clear predictions of when an EPZ is welfare-improving, based on its impact on the level of additional employment created and changes in wages. In addition, some of the case study-based literature focuses on differential labour conditions inside and outside the zone, including lower wages.

Therefore, regarding employment, included studies were required to try to measure additionality. Regarding the other outcomes – wages and labour conditions – the starting requirement for inclusion was a comparison with an appropriate control group. However, as we explain below, given the lack of studies with an appropriate control group, we also included factual studies, which we discuss separately in the synthesis to provide some context.

We established the following initial inclusion criteria for the review:

- They need to provide at least one comparison with the same outcome outside the EPZ and for some comparable group – for example, the same International Standard Industrial Classification (ISIC) sector, same worker category, etc. Some factual studies, however, were included for labour conditions.
- Studies focusing on employment need to focus on some measure of additionality, aggregate employment or net employment effect for the economy.³ It is clear that EPZs employ a significant amount of people, but the extent to which this is additional to employment in other areas of the economy

³ A few surveys that quantify the number of people employed in EPZs already exist (see, for example, Singa Boyenge (2007)).

is less evident. This additionality of employment can also be justified when the study demonstrates additionality of investment – in other words, when studies show that investment would not have occurred outside the EPZ. The same applies to feminisation of employment.⁴

- Studies that focus on wages need to control for the wages at the same level of qualification and sector in and out of the area. These include mainly econometric regressions of the wage premium within the EPZ, quasi-experimental approaches that look at wage differentials between workers who receive the intervention (in the EPZ) and those outside the EPZ, and cost-benefit analysis.⁵ We apply the same criteria when looking at the gender wage gap.
- Studies focusing on labour conditions need to provide information on comparable outcome variables and groups inside and outside of the zone – for example, the average number of hours worked in the same ISIC sector both inside and outside the zone.

In practice, implementing these inclusion criteria has been extremely challenging. Very few studies discuss additionality of employment, and when they do, often only partially focus on it. These studies can be organised into two main groups. The first group analyses, additionality of investment and attempts to measure whether firms in EPZs have in fact reallocated from outside the EPZ. The second group analyses, the reallocation of workers and provides information on previous occupations and migration flows. While both approaches have important shortcomings, which we discuss in the review, we included both types of studies for additionality of employment.

In addition, while the literature on the labour effects of EPZs is relatively large, the issue of an appropriate comparison group appears to be a problem for many studies. This is partly due to the fact that obtaining data for non-EPZ workers is often difficult, given resource constraints in the evaluation designs of existing studies. But more importantly, in some cases it is not clear what the appropriate comparison group should be. This problem is more significant in small developing countries, where some sectors often only operate from within EPZs and similar comparison groups are therefore not available outside the zone.

As a result of these limitations, we were more flexible when including studies for wages and labour conditions. We included studies that document information about these outcomes, especially regarding gender differences, as well as studies that establish some degree of comparison with a control group. In a second stage, we synthesised the evidence using a quality assessment of the studies based on methodology (see Appendix D) and the appropriateness of the control group for comparison. For example, studies of wages range from studies with a higher risk of bias that compare aggregate wages and labour conditions within the labour force

⁴ It is difficult at this stage to specify the included study design. Pilot searches have not identified any studies that have addressed the issue of additionality of employment.

⁵ See Cling *et al.* (2005).

inside and outside the zone, to those with a lower risk of bias that control for skill and sector inside and outside the zone when establishing comparisons.

Finally, we approached the issue of gender impact as transversal to the review. This means that, for each of the outcomes, we also included studies that look at any differentiated gender impact. While in some cases there was still some comparison group with outcomes outside the zone – for example, the feminisation of labour in industries inside and outside the zone – in other cases we also included studies that provided detailed analysis of differentiated impact between men and women in the EPZ – for example, health outcomes. For the latter, we discussed the potential problems of not including information on outcomes outside the zone when attributing causality to EPZs.

The following primary outcome measures are used in this review:

- *Employment effect.* This includes the coefficient for included studies that measures additional employment created or the net employment effect. It also includes the coefficient that measures gender effect.
- *Wage effect.* This includes the coefficient for included studies that measures the impact of the EPZ on wages, controlling for other factors that may affect individual wages – in other words, the coefficient on the EPZ dummy of wage equation or ratio of comparable wages in EPZs *vis-à-vis* national wages – and the gender gap. It also includes comparisons of wage levels inside and outside the zone groups.

We also extracted qualitative information regarding labour conditions. Concretely, we focused on information about three main outcomes:

- *Freedom of association:* whether this is allowed within the area, and the percentage of the labour force that is unionised inside the EPZ compared with the rest of the economy. Also by gender, if this information is available.
- *Working hours:* any information regarding working hours in the EPZ and in comparable sectors outside the EPZ. Also by gender.
- *Health and safety:* any information regarding health and safety conditions and how these differ from the rest of the economy.

Deviations from protocol

Given the low number of studies found that use appropriate counterfactual study designs, we had to deviate from the protocol and use some factual studies. Note, however, that these studies are mainly used to provide context and information, but the synthesis of results is primarily done using studies that use some kind of counterfactual.

Appendix B: Search methods for the identification of studies

Electronic searches

This review systematically searched and collected evidence relevant to the review question. The use of electronic databases is an important part of this process, which can be systematised by carefully documenting the search terms used for that purpose. The choice of search terms used in electronic searches was made bearing in mind two polar opposite objectives: first, the need to capture all relevant studies or to minimise the probability of excluding relevant studies during electronic searches; and second, the need to minimise the probability of including irrelevant studies in electronic search results in order to keep a tab on the cost of the review. A higher number of irrelevant studies in electronic searches increases the costs because they then need to be excluded at a later round of searches.

This review sought to balance these objectives by carefully planning the electronic searches in a way that they included all aspects of the review question, while keeping other EPZ-related issues out. This was done by aligning the searches closely with the logic model in Figure 1. The idea was for each important aspect of the review question to be represented by a set of search terms. These sets could then be combined using logical operators such as AND or OR to construct search terms to be used with the electronic databases. The preliminary searches revealed that four such sets of search terms were relevant for this review:

Set 1 defined EPZs with the following terms: special economic zone; export processing zone; free trade zone; free zone; foreign trade zone; industrial parks; industrial estates; and urban enterprise zone. We also used common abbreviations, such as FTZ, SEZ and EPZ.

Set 2 captured studies on the impact on employment by focusing on the following terms: employment; unemployment; labour; and job.

Set 3 captured studies on the impact on wages by focusing on the following terms: wages; salary; and pay.

Set 4 identified papers on labour conditions and used the following search terms: quality of labour; gender; child labour; low wage; low pay; health; safety; and occupational hazards.

We included plural words and American spelling where relevant in the above keywords. We also translated the keywords above into Spanish and Portuguese and replicated the searches. Words for the Spanish searches included *zona franca*; *empleo*; *salarios*; *condiciones de trabajo*; *sindicatos*; for Portuguese searches *zona franca*; *emprego*; *salários*; *condições de trabalho*; *sindicatos*.

These search strategies were informed and influenced by the previous experience of our research team, as well as that of specialists at the EPPI-Centre. The experience of the researchers in other systematic reviews was imminently relevant, as those reviews also primarily relied upon the databases used here. This previous experience importantly included specific insights into the peculiarities of each of the electronic databases, particularly in relation to the sometimes undocumented limitations of search engines servicing these databases.

The four sets of search terms were combined in a single main search term:

Set 1 AND (Set 2 OR Set 3 OR Set 4)

The following databases were searched: Social Sciences Citation Index (SSCI); IDEAS; International Bibliography of the Social Sciences (IBSS); EconLit; JOLIS; British Library of Development Studies; Web of Science; Google Scholar; and ILO's Resource Guide on Export Processing Zones (this database was added in full). The final search terms and strategies are described below:

Web of Science

This was accessed through Web of Knowledge, which includes other databases. The databases in Web of Science are:

- Science Citation Index Expanded (SCI-EXPANDED) – 1899–present
- SSCI –1898–present
- Arts and Humanities Citation Index (A&HCI) – 1975–present
- Conference Proceedings Citation Index – Science (CPCI-S) – 1990–present
- Conference Proceedings Citation Index – Social Sciences and Humanities (CPCI-SSH) – 1990–present

The following search term was used in the advanced search option:

TS=((special economic zone* OR export processing zone* OR free trade zone* OR free zone* OR foreign trade zone* OR industrial park* OR industrial estate* OR urban enterprise zone* OR FTZ* OR EPZ*) AND (employment OR unemployment OR labour OR labor OR job* OR wages OR salary OR pay OR quality of labour OR gender OR child labour low wage* OR low pay OR health OR safety OR occupational hazard*))

Hits: 288

Options: English (286), Spanish (01) and Portuguese (01) only.

The searches were then saved to Endnotes and imported to Endnotes using import option ISI-CE.

ILO database

We downloaded all studies on EPZs available in

<<http://www.ilo.org/public/english/support/lib/resource/subject/epz.htm#labordoc>>

All publications on developing country EPZs available in Labordoc were downloaded; although some themes covered in these papers were not directly relevant to the present systematic review, they were included. We manually screened them off.

We did the search with the following language restrictions:

+(language:"eng"| language:"spa"| language:"por")

Total studies downloaded: 349

ILO studies: 81

Non-ILO studies: 268

EconLit (ProQuest)

The following search terms were used:

(special economic zone* OR export processing zone* OR free trade zone* OR free zone* OR foreign trade zone* OR industrial park* OR industrial estate* OR urban enterprise zone* OR FTZ* OR EPZ*) AND (employment OR unemployment OR labour OR labor OR job* OR wages OR salary OR pay OR quality of labour OR gender OR child labour low wage* OR low pay OR health OR safety OR occupational hazard*)

Hits: 173

The above search term would NOT copy properly in full in Internet Explorer 9, but Google Chrome handled it well. Also Google Chrome did not give any errors when we tried to download search results.

The above search was done for ONLY English, Spanish and Portuguese. There were only three Spanish or Portuguese studies, so these were not separately downloaded.

IBSS (ProQuest)

The following search terms were used:

(special economic zone* OR export processing zone* OR free trade zone* OR free zone* OR foreign trade zone* OR industrial park* OR industrial estate* OR urban enterprise zone* OR FTZ* OR EPZ*) AND (employment OR unemployment OR labour OR labor OR job* OR wages OR salary OR pay OR quality of labour OR gender OR child labour low wage* OR low pay OR health OR safety OR occupational hazard*)

Hits: 156

The search was done for ONLY English, Spanish and Portuguese. There was only one Spanish or Portuguese study, so this was not separately downloaded.

In IBSS we could restrict the searches to Economics, which would have brought the number of searches down to 80. However, we did not do it, as we were interested in qualitative studies as well – for example, anthropology or sociology. As such, the 156 studies found included subject areas such as anthropology, sociology and political science.

JOLIS

Help in <<http://external.worldbankimflib.org/QSG/jolisqsg.pdf>>

We used the following search terms:

(special economic zone\$ OR export processing zone\$ OR free trade zone\$ OR free zone\$ OR foreign trade zone\$ OR industrial park\$ OR industrial estate\$

OR urban enterprise zone\$ OR FTZ\$ OR EPZ\$) AND (employment OR unemployment OR labour OR labor OR job\$ OR wage\$ OR salary OR pay OR quality of labour OR gender OR child labour low wage\$ OR low pay OR health OR safety OR occupational hazard\$)

Hits: 34

The search was done for ONLY English, Spanish and Portuguese, but the latter two resulted in no studies.

We printed the records as full records, and then used the VBA codes to convert it to RIS.

IDEAS

We used the following search terms:

(export processing zone|special economic zone|free trade zone|free zone|foreign trade zone|industrial park|industrial estate|urban enterprise zone|ftz|epz)+(wage|employment)+(employment|unemployment|labour|labor|job|wage|salary|pay|quality of labour|gender|child labour|low wage|low pay|health|safety|occupational hazard)

Search options:

Match: Boolean, word forms: all, use synonyms: no

Hits: 75

There were a few developed country case studies that we manually removed.

Google Scholar

This was searched using Publish or Perish.

The large number of results was reduced by limiting the searches for titles only.

Each of the following phrases/words was searched along with the 'set of OR words' listed here last. The wild cards (* ?) do not seem to work in Publish or Perish, so the plural terms were added manually. The phrases were put in 'The phrase:' box and the OR words in the 'Any of the words:' box.

1.	special economic zone	18
2.	special economic zones	14
3.	export processing zone	35
4.	export processing zones	65
5.	free trade zone	20
6.	free trade zones	11
7.	free zone	14
8.	free zones	22
9.	foreign trade zone	0
10.	foreign trade zones	1
11.	industrial park	47
12.	industrial parks	26
13.	industrial estate	18

14.	industrial estates	7
15.	urban enterprise zone	2
16.	urban enterprise zones	2
17.	FTZ	2
18.	FTZs	2
19.	EPZ	13
20.	EPZs	18
21.	<u>The list of OR words:</u> employment; unemployment; labour; labor; job; jobs; wages; wage; salary; pay; gender; health; safety; occupational hazard; occupational hazards.	

The 20 searches resulted in the above-mentioned number of hits and were later combined using Endnotes to remove duplicates. The final list without duplicates included 319.

The references for some studies were not clear. These were clarified after uploading to EPPI-Reviewer.

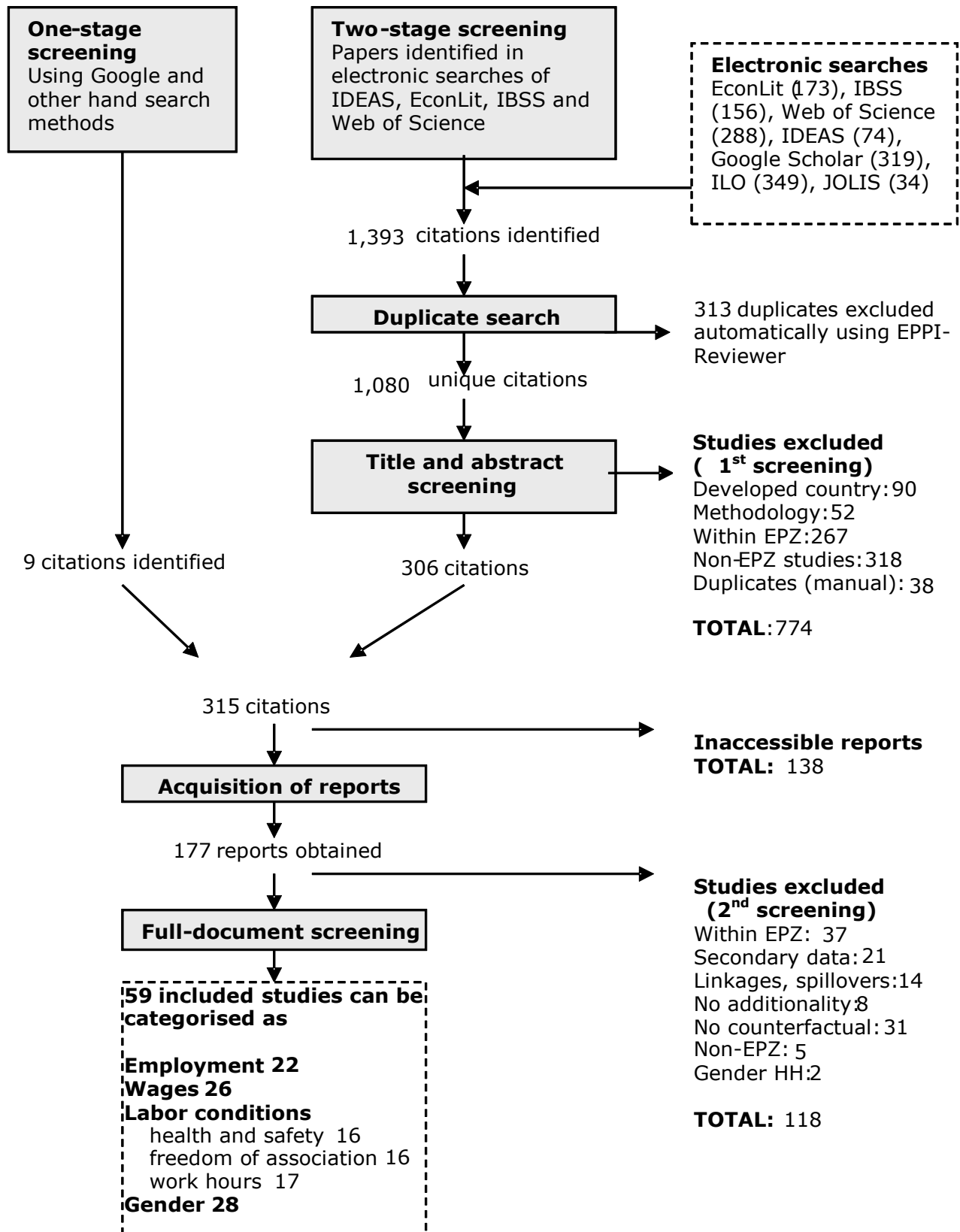
Other searches

We also searched manually on the United Nations Conference on Trade and Development and World Bank websites, since these institutions have relevant reports not indexed in the databases above. Conference proceedings databases in Web of Knowledge and the ProQuest dissertation database were also hand-searched to ensure maximal coverage of unpublished literature.

The initial electronic search and the secondary search were limited to titles, abstracts and keywords (where available) for papers in the above databases. We also focused all the searches on documents published after 1980. The final extracted information as well as full text copies for key papers were coded and managed using the EPPI-Reviewer software.

In addition to the above electronic searches we hand-searched the key journals – such as *World Development*, *World Economy* or the *Journal of Economic Surveys* – for specific papers in these areas. We also conducted bibliographic back-referencing and citation tracking of included studies, especially of key surveys of the literature.

Figure 2 B1 Summary of searches



Appendix C: Data extraction and management

Table 7 C1 Summary of data extraction and management

General information	author; publication date; publication type; journal; year; funding agency; author affiliation; abstract
Type of EPZ	
Geographical coverage	country; region; city; firm
Sector composition	main sectors included in the EPZ
Incentives	incentives available
Results	
Type	focus of the study based on the impact on the following outcomes: • employment • wages • labour conditions ◦ freedom of association ◦ working hours ◦ health and safety
Sample	country; region; or cross-section period of study
Main results	summary of main findings
Methodological approach	econometric analysis qualitative case study cost benefit
Main outcomes	• additional/net employment generated – by sector; gender; etc. • EPZ effect on wages: by sector; gender; etc. • labour conditions ◦ Description and comparison of freedom of association within and outside the EPZ ◦ Description and comparison of working hours within and outside the EPZ ◦ Description and comparison of health and safety within and outside the EPZ For econometric estimates: extraction of standard errors; sample size; R2
Methodological issues	• if econometric methodology, estimator type • quality of comparison between relevant groups within and outside the EPZ • control for other factors that may affect the effect of EPZs
General validity assessment	• appropriate comparison group • representative sample • ability to determine causal relationship • extent to which comparison group can be isolated from intervention effects • justification for the selection of particular specifications or methods • robustness checks
Other	other relevant information about context of intervention

Note: All the information was uploaded and managed in the EPPI-Reviewer; the extracted information from included studies was uploaded in Excel tables.

Appendix D: Risk of bias (quality assessment) in included studies

The quality assessment of the included evidence was implemented according to a set of criteria on the methodology used and its general validity.

Concretely, we assessed methodological issues depending on:

- methodology used;
- if econometric methodology, estimator type;
- quality of comparison between relevant groups within and outside the EPZ; and
- control for other factors that may affect the effect of EPZs.

For general validity assessment we used the following criteria:

- appropriate comparison group;
- representative sample;
- ability to determine causal relationship;
- extent to which comparison group can be isolated from intervention effects;
- justification for the selection of particular specifications or methods; and
- robustness checks.

For each of the elements that required assessment we included a low, medium or high indicator based on appropriateness, which indicates the risk of bias. The quality assessment is discussed with the evidence below. However, the overwhelming majority of studies score very low on: the quality of comparison with other groups; the control for other factors; and the extent to which this comparison can be isolated from the intervention.

Appendix E: Impact tables

Table 8 E1 Employment and gender

Author	Country/ sample/ period	Findings from text	Method*	Quality of comparison between relevant groups within and outside the EPZ	Control for other factors that may influence the EPZ effect	Appropriate comparison group	Representative sample	Ability to determine causal relationship	Extent to which comparison group can be isolated from intervention effects	Main impact
Farole and Akinci 2011	Various countries	When compared with the share of females in non-agricultural employment, the high female intensity of SEZs is all the more revealing (Figure 11.1) and the segmentation of women in export-related employment is quite starkly evident. Women predominate in light industries that are gender-typed as female (e.g. garments, electronics, textiles) while their share of employment is reduced quite starkly in chemicals, wood products and metals. By country, feminisation ranges from 20% (Morocco) to 85% (Jamaica and Nicaragua). Also tend to be in each country around double the share of women labour in non-agricultural sector.	Q	based on secondary data		unclear where data comes from	unclear	low	low	Feminisation varies substantially and is double than in non- agricultural sector.
Mathews 1994	Dominican Republic	Two-thirds of all operations surveyed employ more women than men. Women's participation in total sample firm employment was 62%. As in most countries, women are the major source of labour in EPZs. EPZs have expanded the types of jobs available to women with limited education and skills.	S	none	none	none	n.a.	poor	poor	High feminisation, but no comparison
Dunn 1999	Jamaica Barbados Belize	Garment assembly and data processing services have provided an alternative to agriculture and domestic work, but are considered less attractive than buying and selling (another popular form of employment for women).	Q	no comparison	none	none				High feminisation

Author	Country/ sample/ period	Findings from text	Methods*	Quality of comparison between relevant groups within and outside the EPZ	Control for other factors that may influence the EPZ effect	Appropriate comparison group	Representative sample	Ability to determine causal relationship	Extent to which comparison group can be isolated from intervention effects	Main impact
Aggarwal 2007	India: Noida, Madras SEEPZ 2001	In many developing countries, female participation had been above 70% in the initial phases; in India it was less than 50%. SEZs provide an opportunity for female workers to shift to the organised sector (with higher wages and better conditions). No significant difference between the age distributions of EPZ workers across gender. Marital status: more single women in EPZs than single men (Table 8)	Q COMP	poor: no controls for sectors or skills	none	need more sector disaggregation	focuses inside the zone; outside is national average	poor	poor	Less feminisation in India
Cling <i>et al.</i> 2005	Madagascar (apparel) 1995–2003	In 2001, women represented nearly 70% of the labour employed in the <i>Zone Franche</i> and only 40% in formal industrial jobs outside the zone.	Q	poor; no same sector; too aggregated	none	poor	average; based on census	poor	poor	More feminisation in EPZ
Cling <i>et al.</i> 2007	Madagascar (apparel) 1995–2006	In 2006, women represented nearly 70% of the labour employed in the <i>Zone Franche</i> and only 47% in formal industrial jobs outside the zone.	Q	poor; no same sector; too aggregated	none	poor	average; based on census	poor	poor	More feminisation in EPZ
Jenkins 2005	Costa Rica	52.5% of EPZ workers are male; compared to 73.1% of non-EPZ workers.	ANS	no sector comparison; just aggregate		low	1,173 workers	low	low	Larger female participation in and out of zone; predominantly male Slightly higher feminisation within EPZ.
Blanco de Armas and Sadni-Jallab 2002	Mexico	Female labour in manufacturing has risen from 34.8% in 1991 to 37.5% in 2000 (Table 15)	Q	comparison with different national sectors	none	no data on both skilled and unskilled F labour in EPZ; only unskilled	average; based on census	poor	poor	Hard to be exact as we do not know gender composition of skilled labour

Author	Country/ sample/ period	Findings from text	Methods*	Quality of comparison between relevant groups within and outside the EPZ	Control for other factors that may influence the EPZ effect	Appropriate comparison group	Representative sample	Ability to determine causal relationship	Extent to which comparison group can be isolated from intervention effects	Main impact
Yonghong 1989	China: Shenzhen	83% female employees in EPZs; attributed to the generally exploitative conditions which prevail there, or gender exploitation. Given the background of workers reflected in the sample survey, most (though not all) the industrial workers who are employed in the EPZs would otherwise be unemployed or employed in low-productivity jobs. In terms of employment, EPZs represent a net gain to China; but their magnitude and weight may be insignificant when compared to the national labour market.	Q	comparison before and after; not valid since all not the same occupations	none	low	323 workers	poor	poor	High feminisation Increasing female participation, since many were not working before
Hein 1984	Mauritius 1977	The creation of these particular types of jobs was responsible for increasing the participation rate of women. Almost half (42%) of workers interviewed said they had not been looking for work just before entering their first factory job.	Q	before and after		not appropriate	380 F workers/managers in 23 factories (21 in the EPZ)			Increase female participation
Fu and Gao 2007	China	The foreign-funded enterprises (FfEs) greatly prefer female labour compared to domestic enterprises. Female labour ratio has been around 40% for the past 10 years, though the average ratio of women-to-men employees over all enterprises dropped from 40 to 36.5%. The share of female labour in FfEs, in spite of fluctuating, has always been 10% higher and has been a weak majority in total labour.	Q COMP	poor; aggregate industry salaries	none	need more sector disaggregation	n.a.	poor	poor	10% higher female participation
Glick and Roubaud 2006	Madagascar	<i>Zone Franche</i> attracted more females than males from informal sector. Labour survey data show the EPZ to be the most dynamic sector of the economy since the mid-1990s.	Q	comparison with very aggregated sectors; different activities	none	low	national survey	low	low	Female labour mainly attracted from informal sector.

Author	Country/ sample/ period	Findings from text	Methods*	Quality of comparison between relevant groups within and outside the EPZ	Control for other factors that may influence the EPZ effect	Appropriate comparison group	Representative sample	Ability to determine causal relationship extent to which comparison group can be isolated from intervention effects	Main impact	
Alvarenga and Ligia 2001	El Salvador	88% young, female employment compared with: manufacturing 48%; domestic services 95%; social and health services 65%; hotels and restaurants 61%; education 59%. 69% are household heads, compared to 30% in urban areas.	Q	medium; average sector comparison	none	medium; sector average	national survey	medium	low	Very large feminisation, almost double that in manufacturing outside zones
De Moya 1986	Dominican Republic (different sectors)	Large differences in feminisation of labour between sectors: tobacco 74% (1.5% outside); clothing 73% (45%); shoes 66.2% (22.6%); plastics 77.4% (24.2%).	Q	medium; average sector comparison	none	medium; sector average	national survey	medium	low	Very large feminisation inside compared with outside
Zohir 2001b	Bangladesh: Dhaka EPZ	Employment in the garment industry has definitely empowered women, increased their mobility and expanded their individual choice. But this is achieved at the cost of their health and increased risk of harassment.	Q	226 M, 356 F workers in Dhaka city (1990) 190 M, 470 F workers in factories outside Dhaka EPZ (1997) 27 M, 92 F workers in factories in Dhaka EPZ (1997)	none	low	ok	poor	poor	Employment in the garment industry has empowered women, increased their mobility and expanded their individual choice. But this has been achieved at the cost of their health and increased risk of harassment.

Note:

Q=qualitative; S=survey; ANS=average national survey; COMP=comparison in and out of the zone; M=male; F=female

Table 9 E2 Evidence on the impact on wages

Author	Country/ sample/ period	Findings from text	Method *	Control group and appropriate- ness	Control for other factors that may influence the effect of EPZs	Ability to determine causal relationship	Main findings
Cling <i>et al.</i> 2005	Madagascar (apparel) 1995–2006	Average wage inside and outside the sector both 37% lower than wages inside the EPZ. However, when controlling using earnings equation, no EPZ premium significant compared with the formal sector; 6–17% premium when comparing with all workers, including informal.	E	high; control for skill level	yes	good	As formal private; higher than private informal
Cling <i>et al.</i> 2007	As above 1995–2003	As above, but extending sample to 2006. Similar results with EPZ premium now ranging 3.3–14.6% when including bonuses.	E	as above	yes	good	As above
Fussell 2000	Mexico: Tijuana 1993	Regression analysis of the natural log of hourly wages shows: <i>controlling for duration in the current job, service and commerce</i> , employees earn on average 24% more than <i>maquiladora</i> workers or the self-employed (Table 1, Model 1). <i>controlling for education</i> , the effect of the employment sector diminishes (Model 2): commerce and service workers with secondary education or higher earn 29% more than <i>maquiladora</i> workers with primary education; self-employed workers with less than primary education earn 31% less than <i>maquiladora</i> workers with primary education; self-employed workers with similar levels of education earn 38% more.	E	medium; comparing premium with	yes; mainly education and job duration	medium; coefficients only statistically significant at 90%; small sample	Lower wage
Glick and Roubaud 2006	Madagascar 1995–2001	Use earnings equations to find a positive premium for EPA versus private informal, but lower than private formal, government or public company. Premium is larger for women, though still below these other sectors. Higher growth for women than men; EPZ expansion has likely benefited semi-skilled women both directly and through indirect effects on informal sector wage levels.	E	high; control for skill level	yes	high; lacks sector controls	Higher than informal; lower than others
Kabeer and Mahmud 2004	Bangladesh 2001	Average monthly wage of EPZ workers was 3,014 as opposed to Dhaka garment workers (1,706); self-employed (1,799); and other wage workers (699). EPZ workers reported the highest mean annual household incomes (66,052) – compared to Dhaka garment workers (53,171). Acknowledge, but do not show, that this difference in monthly earnings might reflect the fact that the former group included many higher-grade women. We examined monthly returns separately for helpers, operators and higher grades for the two sets of workers. While wage differentials remained, they were considerably reduced.	Q COMP	medium; comparison of same sector; some control for skill level; too aggregated	none	medium; raw comparison of aggregate averages	Higher wages, reduced once control for skills
Abeywardene <i>et al.</i> 1994	Sri Lanka (textile) 1992	Wages in EPZ factories are slightly higher than those paid by enterprises in the same sectors outside the EPZs (see Table 5.1). Unskilled EPZ worker Rs.2,000–1,500; semi-skilled worker Rs.2,200–1,575; skilled worker Rs.2,300–1,700.	QS	medium; compare skills for the same sector in and outside	none	low	Higher wages

Author	Country/ sample/ period	Findings from text	Method *	Control group and appropriate- ness	Control for other factors that may influence the effect of EPZs	Ability to determine causal relationship	Main findings
Zohir 2001b	Bangladesh: Dhaka EPZ	Comparison of average wages in garment sector: in city, outside city centre and in EPZ. Higher wages for women in EPZ. Lower wages for men compared to outside city centre; larger compared to city centre.	Q	low-medium; compares firms in and outside EPZ, sector unknown	none	poor; no information on orientation of firms outside city centre (export?)	Higher for female; lower for male
Fu and Gao 2007	China 1995–2005	In 1997, the average wage was 62% of foreign-funded enterprise (FFE) wages; 58% in manufacturing. This comparative advantage has since reduced: by 2005 the average wage reached 90% of FFE wages. There are also large differences between the zones in 2005, salaries outside were 5% only larger in some zones, and 100% larger in others such as Guangzhou.	Q COMP	low; comparison of aggregate industry average salaries in and outside	none	low	Higher wages
Aggarwal 2007	India: Noida Madras SEEPZ 2001	Minimum wages in the zones are marginally higher than the lowest statutory minimum wage fixed for unorganised sectors in all zones. There is significant divergence between wage figures reported by workers and managers; but the averages of both indicate similar levels to those outside the zone.	Q COMP	low; comparison of aggregate industry average salaries in and outside	none	low	Higher wages
Bhattacharya 1998	Bangladesh: Dhaka EPZ	Monthly wage rates in EPZ enterprises are more than 46%, 18% and 28.5% higher than wages in comparable manufacturing units operating elsewhere in the national economy.	Q	low; compares aggregate industry average salaries in and outside	none	low	Higher wages
Chant and McIlwaine 1995	Philippines: Mactan EPZ 1993	In our survey of firms in Cebu City, average wages were lower than in MEPZ P671 (US\$25.8), although foreign firms pay up to P1,022 (US\$40.9) on a fixed salary system, compared with only P650 (US\$25) in Filipino firms using piece rates. Benefit systems are much less widespread among indigenous firms, who often violate legal requirements such as social security coverage, and rarely provide extra privileges. Foreign firms offer working conditions similar to those in MEPZ.	Q	low compares aggregate industry average salaries in and outside	none	poor	Higher wages
ILO 2001a	Global 100 countries	115 questionnaire respondents support that wages and benefits are higher in EPZ than in comparable employees outside. One suggested that there are no comparable employees.	QS	low; based on perceptions; unclear comparison group	none	poor	Higher wages
ILO 2001b	Global 100 countries	Accompanying document to previous, with country government and some other actors. Not clear how the question is formulated.	QS	as above	none	poor	Higher wages

Author	Country/ sample/ period	Findings from text	Method *	Control group and appropriate- ness	Control for other factors that may influence the effect of EPZs	Ability to determine causal relationship	Main findings
Sivalingam 1994	Malaysia	Wages earned EPZ workers are at least equal to or higher than those earned for comparable work in other sectors of the economy. EPZ electronics and textile firms pay higher wages than those operating elsewhere. On average, electronic and textile workers in the zones made 30% more than non-EPZ workers (see Table 6.1). EPZ non-metallic and mineral products workers earned about 14% more than their counterparts outside the zones. Average wages of EPZ workers in food, beverage, tobacco and plastics sectors earned 9–10% less than those located outside the zones. This may be because firms in the zones are locally owned.	Q	low; same sector comparison; contradictions with table in text	none	poor	Higher wages
Wu 1985	China: Guandong Shenzhen	Average earnings in Shenzhen SEZ are extraordinarily high compared with those in state-owned enterprises or public service. Wages and working conditions in the two Chinese SEZs proved to be attractive for Chinese workers, with significantly higher wage scales than those of comparable enterprises in other parts of China. Actual disposable incomes are, of course, not necessarily that much more as cost of living in the SEZs can be higher; detailed information lacking for definitive statements. Working in the SEZs means the possibility of much higher cash income, which is still uncommon in China despite the new-found opportunities in the country, and is a sought-after opportunity.	Q	low; compares salary scales but not sectors	none	poor; corrects for standard of living, but calculations not shown	Higher wages
Warr 1987	Philippines	Survey of 32 firms inside and outside the EPZ, conducted by the Ministry of Trade and Industry in 1982, indicates that wages in the Bataan zone were slightly below those in similar industries in Metropolitan Manila for unskilled workers, and approximately the same for skilled workers. However, the different living costs mean that real wages for unskilled workers are roughly the same in the EPZ as in comparable employment in Manila; real wages for skilled workers are somewhat higher in the EPZ.	Q	low; unclear calculations of wage differences	none	very poor; corrects for standard of living, but calculations not shown	Same or higher
Hein 1988	Mauritius (apparel) 1973–1986	Data concerning average earnings in different types of manufacturing suggest that earnings tend to be lower in the types of industry located in the EPZ, but that the differential has been decreasing over time, from 50% in 1973 to 80% in 1986.	Q COMP	low; compares average salaries in and outside in different sectors	none	poor	Lower wages
Mireri 2000	Kenya (32 sectors)	Employees in non-EPZ businesses are better paid than those in EPZs; salaries in EPZs show more dispersion and managers are better paid.	QS	low; compares aggregate industry average salaries in and outside	none	poor	Lower wages

Author	Country/ sample/ period	Findings from text	Method *	Control group and appropriate- ness	Control for other factors that may influence the effect of EPZs	Ability to determine causal relationship	Main findings
Possas <i>et al.</i> 1987	Brazil (electro- electronics) 1981	Compares wages in electro-electronic sector in Manaus EPZ with national average (100) and São Paulo. Based on industrial census, average wages are: São Paulo (130), Manaus (75); average production wage: São Paulo (132), Manaus (75), despite EPZ workers being unionised in Manaus.	Q	low; same sector but comparing different sectors with large differences in cost of living	none	poor	Lower wages
Sen and Dasgupta 2008	India: W. Bengal Delhi Haryana Gujarat Maharashtra 2004–2006	The gap between average hourly wage between non-SEZ and SEZ workers is Rs 5.08, which is significant at the 1% level. However, the sample contained only 66 non-SEZ workers and 566 SEZ workers.	Q	low; compares aggregate industry average salaries inside and outside; small sample	none	poor	Lower wages
Castro 1982	Philippines Bataan EPZ 1980	Average total earnings per day of these workers in their previous jobs was PHP22.6 (at 1980 prices) (See Table 9), while average daily earnings in the zone were PHP 30.5. It would thus appear that there was, in general, a clear income gain in moving into a job in the zone.	Q	low; compares before and after; not valid since 66% were not working	none	poor	Higher wages
Yonghong 1989	China: Shenzhen	Only 8% of EPZ workers earn more than they did in previous job. Sampled male workers earn 23 yuan more than female workers. However, the sample has a higher proportion of female workers who were trainees and a higher proportion of male who were skilled. Disregarding the long working hours, earnings of the workers in the zone compare favourably with those outside the zone. Most of the workers have an average monthly income comparable to that of the urban manufacturing workers in China's major cities.	Q	low; comparison before and after; not valid since not all the same occupations	none	poor	Higher wages
Joeke 1987	Dominican Republic	Empirical evidence that wages in export processing are directly discriminatory by gender is hard to come by, in the Dominican Republic as in other countries. The concentration of women in assembly work (few men are engaged in the same work) makes a controlled comparison difficult. But in cases where men are present in export-processing firms, their wages are found to be much higher than women's.	Q	compares M and F wages within the zone	none	poor	No impact on gender gap
Soni-Sinha 2010	India: Uttar Pradesh	Discrimination against women is not so apparent in the wage level itself; but rather in the differences in the status given to men and women. Perceptions of skill, the transferability of some skills to the handmade jewellery sector and a policy of keeping women as 'permanently casual' in some companies advantaged men as a group.	Q	compares M and F within zone; no comparison with outside EPZ	none	poor	No impact on gender gap

Author	Country/ sample/ period	Findings from text	Method *	Control group and appropriate- ness	Control for other factors that may influence the effect of EPZs	Ability to determine causal relationship	Main findings
Hein 1984	Mauritius (apparel) 1977–1991	No effect of EPZs on wage difference.	Q	compares M and F within zone	none	poor	No impact on gender gap
Zohir 2001a	Bangladesh: Dhaka EPZ	Wage discrimination exists in the EPZ; women are estimated to earn 87% of men's wages in both garment and non-garment industries. About 40% of men and 25% of women earn above the minimum wage set for the skilled workers.	Q	compares M and F within zone	none	poor	Gender gap persists
Zohir 2001b	Bangladesh: Dhaka EPZ	Gender wage gap has increased; women earned only 58% of male wages in 1997, and 69% in 1990. This is likely to be due to piece-rate payment for knitwear to male workers. In the Dhaka EPZ, wages were Tk.1,521 for women and Tk.2,299 for men. The wage gap between Dhaka EPZ and outside the zone was only 2% for men, but 16% for women.	Q	compares M and F within zone	none	poor	Gender gap persists

Note:

* E=econometric; Q=qualitative; S=survey; COMP=comparison in and out of the zone; M=male; F=female

Table 10 E3 Evidence on the impact on unionisation

Author	Country/ sample/ period	Findings from text	Method	Control group and appropriateness	Control for other factors that may affect the effect of EPZs	Ability to determine causal relationship	Main findings
Dunn 1999	Jamaica Barbados Belize	Trade union activity is discouraged in Jamaica and Belize; in Barbados a social partnership between trade unions, government and the private sector attempts to ensure workers' rights to freedom of association and the right to organise. While in principle this is good, experiences in recent years with some data-entry companies show that there is still a long way to go in accepting the principle of workers' rights; some companies have moved their operations elsewhere rather than accept a unionised workforce.	Q	anecdotal evidence	none	low	Evidence of unionisation discouraged
Gopalakrishnan 2007	Multiple countries	Section 3 gives many examples where freedom of association has been challenged in EPZs around the world by way of: • <i>legal restrictions (explicit or implicit) on unionisation</i>: Bangladesh, Namibia, Pakistan, Nigeria, Togo, Colombia • <i>preventing unions from accessing EPZs</i>: Dominican Republic, Sri Lanka • <i>legal restrictions on industrial action</i>: Bangladesh, Namibia, Nigeria, Pakistan, Sri Lanka, Philippines, Turkey, India • <i>interference in the affairs of workers' organisations</i>: Bangladesh, Sri Lanka, Nicaragua • <i>anti-union discrimination</i>: Costa Rica, Dominican Republic, India, Nicaragua, Sri Lanka, Guatemala, Philippines; and • <i>action against collective bargaining</i>: Dominican Republic, Philippines, Sri Lanka, Malaysia, India, Nicaragua.	Q	anecdotal evidence	none	low	Evidence of unionisation discouraged

Author	Country/ sample/ period	Findings from text	Method	Control group and appropriateness	Control for other factors that may affect the effect of EPZs	Ability to determine causal relationship	Main findings
ICFTU 2003	Bangladesh Philippines Lesotho Sri Lanka China	Various infringements of trade union activities in and outside the law; great practical difficulties when trying to gain access to zones and to make contact with the workers. China suppresses any form of independent trade union organisation within companies; legislation prohibits workers from affiliating to anything other than the All-China Federation of Trade Unions, which is fully controlled by the Chinese Communist Party. China has not ratified either of the two core ILO Conventions: on freedom of association and the right to organise and bargain collectively.	Q	anecdotal evidence	none	low	Evidence of unionisation discouraged
ILO 1996	Central America Dominican Republic 1990s	Documents for all countries ii0 problems for the trade unions to operate within the EPZs and redundancies related to trade unionisation.	Q	anecdotal evidence	none	poor	Evidence of intimidation, but no indication about what happens outside the zones
Bellman 2004	Nicaragua Honduras 2000–2001	The only work experience variable related to women's group membership is the length of time employed in EPZs; as expected, workers with more experience are more likely to join women's organisations. 0.029 (0.012).	E	no comparison; trying to explain unionisation among workers	yes	large	On determinants of unionisation: length of employment in EPZ increases probability of unionisation among women
ILO 2001a	Multiple countries	Some respondents reported that workers in EPZs have the right to form associations of their own choosing or bargain collectively on the terms and conditions of employment which would apply to them. Others indicated that EPZ workers did not have the right to form associations of their own choosing, or to bargain collectively on terms and conditions of employment. Several indicated that in some situations, EPZ workers were recognised as having these rights in law, but may not always be able to exercise them in practice. Several respondents' reports reflected a position of power of the MNEs investing in EPZs with regard to government policy and action which brought an adverse impact on workers' exercise of freedom of association and right to collective bargaining.	Q	no comparison	none	low	Mixed: evidence of unionisation discouraged in some countries, and not in others

Author	Country/ sample/ period	Findings from text	Method	Control group and appropriateness	Control for other factors that may affect the effect of EPZs	Ability to determine causal relationship	Main findings
ILO 2001b	Global 100 countries	Accompanying document to previous with country government and some other actors. Not clear how the question is formulated. • <i>Tanzania</i>: MNEs operating in Zanzibar EPZs are unwilling to permit workers to organise unions. • <i>Panama</i>: Incentives in no way restrict freedom of association or the rights of workers to form trade unions and engage in collective bargaining. • <i>Madagascar</i>: In theory, workers have the right to form associations and bargain collectively in EPZs/SEZs, but the majority lack trade union experience and practice. • <i>Mozambique</i>: Laws applicable in SEZs/EPZs differ from those applied elsewhere in the country; workers have no right to form associations and bargain collectively. • <i>Pakistan</i>: EPZs/SEZs have a total ban on labour activities; workers do not have the right to form associations of their choosing or to bargain collectively on terms and conditions of employment.	QS	no comparison	none	poor	Heterogeneity of union rights, but no information outside
ILO 1988	Asia: various countries Early 1980	Table 15 clearly suggests that unionisation rates are far from negligible, ranging as they do from a high of 90% in Indonesia and around 60% in Taiwan to a low of around 10% in India and 3% in Malaysia. The Philippines is somewhere in the middle range with a rate of around 43%.	Q	no comparison	none	low	Heterogeneity of unionisation rates in EPZs across countries
ILO 2003b	Philippines	<i>Myth 6: It is difficult to organise workers in the EPZs.</i> The same may well apply to companies outside of the zones; the tactics employed by management are the same in and out of the EPZ. Nevertheless, women workers inside the zone were able to organise.	Q	unclear comparison group	none	low	Evidence of unionisation discouraged, both in and out of the zone
Sen and Dasgupta 2008	India: W Bengal Delhi Haryana Gujarat Maharashtra 2004–2006	Contradictions between tables and text. According to table, unionisation is at 40% both in and out of the zone. According to the text, those outside the SEZs are relatively more organised as members of trade unions, and a higher percentage of SEZ workers (almost 75% of those in the sample) fear losing their jobs, and therefore live with uncertain job prospects, compared to their non-SEZ counterparts.	Q	low; very small sample for SEZ workers; also no clear sector comparison; but at least there is comparison	none	low	Same inside and outside

Author	Country/ sample/ period	Findings from text	Method	Control group and appropriateness	Control for other factors that may affect the effect of EPZs	Ability to determine causal relationship	Main findings
Cling <i>et al.</i> 2005	Madagascar 1995–2002	The rate of trade union presence in the <i>Zone Franche</i> is almost as high as in the public sector and double the rate for the rest of the industrial sector. This can be linked, in particular, to the large average size of EPZ companies compared with other industrial companies.	Q	low; aggregated figures; no same sector	none	low	Higher unionisation inside EPZ than private sector outside
Glick and Roubaud 2006	Madagascar: Antananarivo 1995–2003	More unionised than private sector firms outside the zone and less than in the public sector. Only a small minority of wage earners in Tana are union members; only in the public enterprises is more than a quarter of the workforce unionised (39%). The <i>Zone Franche</i> resembles the public sector more than other private formal and informal wage employment: some 13% of <i>Zone Franche</i> workers belong to a union (out of 42% who say there is a union in their place of work) compared with 18% in public administration (49% who report the presence of a union) and 8% for other formal private employment (16% report presence of a union).	Q	low; comparison in very aggregated sectors; different activities	none	low	More unionisation than in other private sector firms outside the zone and similar to public sector
Mireri 2000	Kenya (32 sectors)	Trade union is either prohibited or discouraged in EPZ. However, 18.4% of sampled EPZ employees are members of a trade union, similar to those outside of EPZ (17.6%).	QS	low	none	low	Slightly more unionisation inside EPA than outside, even when it is discouraged
Ver Beek 2001	Honduras: Cortés 1998	8.5% of <i>maquiladora</i> workers are unionised, compared to 11.3% of new applicants. There is no difference between men's and women's participation and attitude towards unions. But most workers interviewed do not want unions at the zone due to distrust (27%), fear of company reaction (29%) and no need (40%).	compares EPZ workers with EPZ job applicants	low; no comparison with sectors and groups outside, only with applicants as control group	none	low	Less unionisation of EPZ workers, but not much less. Some evidence of dislike and fear of having unions in EPZ
Zohir 2001a	Bangladesh: Dhaka EPZ	Workers' right to organise is recognised at a national level, but is denied in the EPZs, where it is a stated incentive for investing in Bangladesh.	Q	low; based on rights, not compared with whether implemented outside the zone	none	poor	Unionisation not allowed in EPZ, unclear whether unionisation happens outside the zone
Kabeer and Mahmud 2004	Bangladesh: Dhaka city and peri-urban outskirts 2001	More EPZ workers (5%) reported presence of trade unions than Dhaka garment workers (1%).	Q	medium; representative sample and same sub-sector comparison	none	medium	Higher unionisation in EPZ than outside for same sector. Still very low

Table 11 E4 Evidence on the impact on health and safety

Author	Country/ sample/ period	Findings from text	Method	Control group and appropriate- ness	Control for other factors that may affect the effect of EPZs	Ability to determine causal relationship	Main findings
Liberato and Fennell 2007	Dominican Republic. FTZ workers are: 80.9% textiles; 6.13% food industry; 5.2% machinery; 7% others.	In support of the GAD and employment literature, we identify the positive effects of FTZ employment on the odds of declaring illness, and the positive effects of gender and FTZ employment on the odds of hospitalisation. The odds of occurrence of illness in FTZ workers are 2.68 times higher than for non-free trade zone workers. In the case of the Dominican Republic, results show that female headship and free trade zone employment are linked to household health outcomes; but in some cases, the effect is a positive one. For instance, the analysis of free trade zone employment on household health generates mixed findings. There is a favourable influence of free trade zone employment on the tenure of coverage of social security, while on the other hand female-headed households in the free trade zones have higher probabilities of declaring illness. Results also show that gender has a positive impact on the usage of preventive medicine.	logistic regression	high; appropriate comparison	yes	high	EPZs negatively affect health and increase women's likelihood of being hospitalised. Paradoxically, EPZs increase health outcomes in the household
Guendelman and Silberg 1993	Mexico Tijuana 1990	Despite working more hours and having lower wages, <i>maquiladora</i> women did not report more depression or lack of control over life than women outside.	S	medium, comparison in and out of the zone, although not at the same sector as above	medium	medium	No impact of <i>maquiladora</i> on depression or control over life
Hovell <i>et al.</i> 1988	Mexico Tijuana 1990	Results showed essentially no difference in many short-term self-reported symptoms of illness among <i>maquiladora</i> workers and two other groups. Women who worked exclusively in the home reported the greatest number of symptoms. These results suggest that additional primary care services may be needed for women who have primarily domestic responsibilities. Additional research is needed to assess the risks for long-latency morbidity.	S		medium	medium	No difference in morbidity among <i>maquiladora</i> women
Zohir 2001b	Bangladesh (garments) 1992–1997	The incidence of illness was higher for female workers than male workers for almost all types of illness, both in 1990 and 1997. The most frequent illness was cough and cold, followed by physical weakness and headache in 1990. These two remained high even in 1997. The incidence of work-related illness was much lower for men in Dhaka EPZ than those outside; for women results were similar.	QS	compares M and F; and with aggregate incidence outside	none	low	Incidence of illness greater for females than for males

Author	Country/ sample/ period	Findings from text	Method	Control group and approp- riateness	Control for other factors that may affect the effect of EPZs	Ability to determine causal relationship	Main findings
Ver Beek 2001	Honduras Cortés 1998	Far more health problems between employees and applicants as control groups. 44.6% of women workers and 51.6% of male workers had health problems in the previous months, compared to 7.1% women applicants and 11.3% total applicants.	QS	low; no comparison with sectors and groups outside; only with applicants as control group	none	low	Much greater health problems among EPZ workers
Attanapola 2005	Sri Lanka (garments, shoes and toys)	Regardless of the fact that globalisation has both positive and negative impacts on people's health, it can be concluded that the women industrial workers in Sri Lanka generally experience the negative impacts. The narratives are unable to recall any positive impact of globalisation on EPZ women's health. The exception is a small number of women workers who have raised awareness on issues related to health and well-being through organisational activities, who fight for workers' rights to enhance their health status.	strong ethno-graphic details linking with EPZs	low; only comparison with previous tasks of women EPZ workers	none	low; very small sample; no comparison with manufacturing outside zone	EPZ worsens health, comparing with previous tasks
Botchie 1984	Liberia Ghana	Safety regulations are strictly adhered to in the Volta Aluminum Company (VALCO) because it views the maximisation of safety on the job as key to the success of any industrial enterprise.	incentives	comparison of incentives	none	low; no discussion on whether workers have better or worse health	EPZs provide more health benefits
Wang <i>et al.</i> 2002	Taiwan	A higher prevalence of urinary tract infections (6.2% versus 2.5%, $p = 0.008$) was observed among clean-room workers. After adjusting for age, frequency of drinking water, and working in clean rooms, women were found to have a significant risk factor and going to the bathroom three times or more during a shift was a protective factor.	randomised controlled trial	comparing different tasks in EPZ	high	high within EPZ, but not with outside	High prevalence of urinary tract infection in clean rooms within zones, but no comparison with outside the zone

Author	Country/ sample/ period	Findings from text	Method	Control group and appropriate- ness	Control for other factors that may affect the effect of EPZs	Ability to determine causal relationship	Main findings
Lu 2008	Philippines	This study showed that there were significant associations between certain work-related factors and the incidence of occupational illnesses and injuries, reproductive health problems and psychosocial disorders. Occupational hazards and their effects on the health of women workers were also identified. With multinomial logistic regression, noise was found to be associated with hearing loss, while chemicals, dust and poor ventilation were related to headaches and dizziness as well as cough and colds. Other significant associations included: backache with radiation; excessive work; poor posture; hypertension; exhaustion with excessive heat; and poor ventilation. Moreover, the study showed that psychosocial problems (mental illness, absenteeism, drinking problems, smoking, etc.) were related to particular organisational factors such as: repetitive work; prolonged standing; strenuous work; excessive mental and visual demands; and others.	logistic regression	compares M and F within the zone	none	high for factors contributing to illness within EPZs	High incidence of illness among EPZ women workers related to specific tasks
Khan <i>et al.</i> 2010	India Hayatabad Industrial Estate Peshawar	Gender is the first individual characteristic that is significantly related to the level of mental health problems among workers at the Hayatabad Industrial Estate in Peshawar. Female workers have high levels of mental disorders, with an average GHQ-28 score of 81, compared to male workers, who have an average GHQ-28 score of 69. F ratio of 6.17 is statistically significant for difference at 0.048 significance level.	ANOVA	as above	none	medium	Women more susceptible to mental health disorders than men
Del Prado-Lu 2008	Philippines (electronics and garment industries in Cavite and Laguna EPZs) 2002–2006	For the frequency distribution of illnesses among supervisors (Table 14), the most prevalent illnesses among females were: anaemia (100%), abortion (100%) and skin allergy (83.9%). For males, it was wounds (75%), eye problems and urinary tract infection (both at 31.2%).	ANOVAs	as above	none	medium; although very small sample (31 women, 16 men)	High incidence of illness among EPZ women workers than men
ICFTU 2003	Bangladesh Kenya	In Kenya exemptions are currently granted to EPZ companies, which are therefore not obliged to observe the health and safety legislation that is generally applicable in the workplace. Bangladesh is one of the most dangerous countries in this respect: there are several fires a year in companies packed with people who are often locked into the premises.	incentives and anecdotal evidence	no comparison	none	low	Documents derogations on health and safety in Kenya and fires in Bangladesh

Author	Country/ sample/ period	Findings from text	Method	Control group and appropriate- ness	Control for other factors that may affect the effect of EPZs	Ability to determine causal relationship	Main findings
ILO 2001b	Global 100 countries	• <i>Kenya</i>: Multinational enterprises (MNEs) are exempt from health and safety laws in EPZs. Very few, if any, MNEs have incorporated health and safety matters into collective agreements with workers' representatives since, in most cases, MNEs do not allow their workers to join a trade union. • <i>Philippines</i>: Most MNEs operating in EPZs are still non-unionised. In accordance with the ILO's international labour standards, the Filipino Trade Union Congress reported, during tripartite consultations held in 1997, which relevant information on occupational safety and health standards has not been made available.	QS	no comparison	none	low	Problems for Kenya and Philippines
ILO 2003b	Kenya Togo	• <i>Kenya</i>: Foreign enterprises take advantage of weak safety and health enforcement to operate at much lower standards. • <i>Togo</i>: Workers' views are that special incentives offered in EPZs to foreign investors seriously limit fundamental human rights, basic trade union rights, employment security, equality of treatment and other rights of workers, including those relating to occupational safety and health.	QS	no comparison	none	low	Documents problems of enforcement in Kenya and Togo
Lu 2009	Philippines	88.8% of the 500 respondents were female; 69.6% were single and 87.4% worked in production or in an assembly-line station. Absenteeism through sickness was relatively high among the workers in this study, accounting for almost 54% among women and 48% among men. The study showed that across industry sizes, some of the small-scale industries did not have health and safety committees; only 83% provided medical examinations to their workers; and 50% kept medical records of their workers.	qualitative large survey of EPZ workers	no comparison with outside EPZ	none	medium; large sample, for documenting illness incidence	Documents a high proportion of absenteeism through sickness and occupational health problems within the EPZ
Moure-Eraso <i>et al.</i> 1997	Mexico	The survey found evidence that <i>maquiladora</i> workers (81% female) report symptoms from musculoskeletal disorders related to working conditions, as well as acute health effects compatible with chemical exposures. Prevalence of symptoms was correlated with increasing duration of exposure to ergonomic risk factors and qualitative chemical exposure indexes. Other chronic disease was not apparent.	as above	as above	none	medium; large sample, for documenting illness incidence	Documents a high prevalence of health problems in EPZs
ILO 2001a	Global 100 countries	The views of some of those who reported limitations on (or a lack of) agreements reflected concerns. This was particularly so in EPZs where the need to further develop the awareness of workers and enterprises around the need for, and right to, occupational safety and health was expressed.	QS	Unknown; based on perception	none	low	Evidence of health and safety limitations

Author	Country/ sample/ period	Findings from text	Method	Control group and appropriate- ness	Control for other factors that may affect the effect of EPZs	Ability to determine causal relationship	Main findings
Del Prado-Lu 2008	Philippines	Workers and supervisors alike reported illness and job dissatisfaction. Survey showed that the most prevalent issues among workers were: the need to upgrade skills (76.3%); pressured in doing work (60.5%); fast-paced work (60.5%); repetitive work (63%); and that work is both physically and mentally tiring (59.7%). On the other hand, supervisors described their work as: challenging and stimulating (66%); said they needed regular upgrading of skills (46.8%); and the need for literacy on information technology (31.9%). Focus group discussions showed that both workers and supervisors were confronted with stress, fatigue, re-engineering and downsizing by management, low job control and difficult worker-supervisor relationships.	QS	no comparison	none	low for factors contributing to illness within EPZs	Health of workers and supervisors are affected by both organisational and management factors at work

Note: * E=econometric; Q=qualitative; S=survey; COMP=comparison in and out of the zone; M=male; F=female

Table 12 E5 Evidence on working hours

Author	Country/ sample/period	Findings from text	Method*	Control group and appropriateness	Control for other factors that may affect the effect of EPZs	Ability to determine causal relationship	Main findings
Alvarenga and Ligia 2001	El Salvador	50% work 47 hours a week (more than the legal 44), but 49.61 on average outside industry and textile 47.82, so in fact below outside zone.	QS	medium; sector average	none	medium	Slightly lower than sector outside
Kabeer and Mahmud 2004	Bangladesh	30% EPZ workers reported working more than 10 hours a day; this compares to a staggering 72% in the Dhaka garment factories.	QS	medium	medium	medium	Less working hours than other areas
Mireri 2000	Kenya 32 sectors	Nearly 70% of the sampled EPZ employees and 59% of the non-EPZ sample work 40–45 hours a week. 10% of EPZ employees and 18% non-EPZ employees work over 49 hours per week.	QS	medium; aggregate comparisons, but at least comparison	none	medium	Less working hours inside the zone
Aggarwal 2007	India: Noida Madras SEEPZ 2001	The majority of workers sampled work within the legal limit (48 hours a week or nine hours a day). Only a few exceeded this, but that happened outside the EPZs too. Compulsory overtime is not practised widely, and was mostly reported in Noida.	Q COMP	as above	none	medium	No difference
Cling <i>et al.</i> 2005	Madagascar 1995–2002	In 2001, <i>Zone Franche</i> employees worked nine hours longer on average per week than their counterparts in non-EPZ private industrial companies (53 and 44 hours per week, respectively).	QS	medium; different activity average	none	medium	Workers work more hours in EPZ than outside
Glick and Roubaud 2006	Madagascar: Antananarivo 1995–2003	Working hours: public 161, public enterprise 172, private sector 187, EPZ 211, private informal 180.	QS	as above	none	medium	Higher hours
Sen and Dasgupta 2008	India: West Bengal Delhi Haryana Gujarat Maharashtra 2004–2006	SEZ workers work on an average 0.48 hours more a day than their non-SEZ counterparts. Besides, the variance for the mean hours of work is higher in the case of SEZ workers indicating flexible working time and very long daily working hours in the case of few workers in the sample.	QS	as above	none	medium	Higher hours

Author	Country/ sample/period	Findings from text	Method*	Control group and appropriateness	Control for other factors that may affect the effect of EPZs	Ability to determine causal relationship	Main findings
Botchie 1984	Liberia Ghana	VALCO operates 24 hours, seven days a week, with three main shifts for factory workers: 07.00–15.00; 15.00–23.00; and 23.00–07.00 hours. Each shift works 40 hours a week or eight hours per shift. Office workers, called <i>straight day</i> workers, work 07.30–15.30 hours every day. Monrovia EPZ working hours does not violate labour laws.	time openings	no comparison	none	low	No violation of labour laws
Hancock <i>et al.</i> 2009	Sri Lanka	Long hours of work for factory women are reported in the literature and found in our data. On average, women report working 43.29 hours per week before overtime, with 95% reporting an average of involuntary overtime of 12.78 hours a week. This means that on average, women worked 56 hours a week, earning an extra LKR 2,897.45 per month. These working hours do not breach national or international standards.	QS	no comparison	none	low	Evidence of work involuntary overtime, but not breaching national legislation and no comparison with outside
Castro 1982	Philippines Bataan EPZ 1980	Actual hours of work were higher than standard (8 hours a day; and 48 hours a week). As shown in Table 16 about 46% of workers worked overtime taking the actual average hours worked per week to 53.9. The average working week for those workers who do overtime is extremely high: 59.9 hours (50% higher than the accepted norm in industrialised countries). Furthermore, almost 25% of workers in the zone worked more than 60 hours per week and 5% worked more than 70 hours per week.	QS	no comparison	none	low	Evidence of overwork, but no comparison with outside the area

Author	Country/ sample/period	Findings from text	Method*	Control group and appropriateness	Control for other factors that may affect the effect of EPZs	Ability to determine causal relationship	Main findings
Ford 1984	Korea Malaysia Philippines Sri Lanka	Wages are reported to be lower inside the zones, and working hours considerably longer. It therefore follows that if the overtime element is eliminated from the workers' earnings both outside and inside the zones, then those inside are much worse off and are being exploited more pitilessly. Furthermore, as well as excessively long hours in the zone, these are usually worked at an intensive pace. EPZ Act made one major exemption to existing labour provisions, allowing a nightshift for women; in other industries, women may not work between 22.00 and 05.00. Unlike other sectors, the EPZ has compulsory overtime.	anecdotal evidence	none	none	very low	Evidence of long working hours, but it is unclear how trade unions obtain information
Hein 1988	Mauritius (apparel)		QS	none	none	low focus on law, but not on implementation outside	Legal exemptions make overwork compulsory, but implementation outside the zone not discussed. Documents abuses on working hours in Jordan
ICFTU 2005	Jordan	Migrants work 10, 12 or 15 hours a day – as many as are needed to satisfy the orders. They are practically forced to accept these conditions, being completely tied to their employers, who confiscate passports on arrival.	case study	no comparison	none	very poor; anecdotal	
ILO 2001b	Global 100 countries	In Mauritius, overtime is computed on a weekly rather than a daily basis: workers have to complete 45 hours of work a week, irrespective of the number of hours worked on a daily basis, before any overtime accrues. Workers may also be required to perform an extra 10 hours a week, and to work on public holidays. Women EPZ workers may be required to work between 22.00 and 05.00, unlike those in other industrial undertakings, but are not required to resume work before a lapse of 12 hours.	QS	no information	none	low	Overwork and compulsory work in Mauritius; no comparison outside

Author	Country/ sample/period	Findings from text	Method*	Control group and appropriateness	Control for other factors that may affect the effect of EPZs	Ability to determine causal relationship	Main findings
Lu 2009	Philippines	The study documents the most frequent hazards – such as heat; exertion involving back; excessive work; poor ventilation; dust; and chemical exposure. Excessive work can be a result of: overtime; long working hours; work intensification within the regular work regimen; and extended work. In this study, 60.6% worked for more than eight hours per day, and 17.2% have been with the company for more than ten years.	QS	no comparison	none	low	Evidence of excess work in the EPZ, but no comparison with outside
Yonghong 1989	China: Shenzhen	Average of 68 hours worked per week, with 43% working 71–80 hours a week. The Buji zone workers might have the longest weekly working hours among Asian EPZs for which relevant data are available. In many zone factories, overtime work is compulsory (Table 15 shows breakdown of men and women).	QS	no comparison	none	low	Evidence of overwork and in some cases compulsory overwork

Note: * E=econometric; Q=qualitative; S=survey; COMP=comparison in and out of the zone; M=male; F=female

Appendix F: Heterogeneity analysis

Table 13 F1 Heterogeneity of results: wages

Author	Country	Wages	Decade	Main sector
Zohir 2001b	Bangladesh	+	1990s	clothing
Bhattacharya 1998	Bangladesh	+	1990s	clothing
Kabeer and Mahmud 2004	Bangladesh	+	2000s	clothing
Possas <i>et al.</i> 1987	Brazil	–	1980s	electro and electronic
Fu and Gao 2007	China	+	1995–2005	various
Wu 1985	China	+	1980s	textile, clothing, metal-machinery, electronics
Yonghong 1989	China	+	1980s	textile, clothing, metal-machinery, electronics
ILO 2001a	global	+	1990s	various
ILO 2001b	global	+	1990s	various
Sen and Dasgupta 2008	India	–	2000s	various
Aggarwal 2007	India	+	2000s	various
Mireri 2000	Kenya	–	1990s	clothing, printing, chemical and pharmaceutical
Glick and Roubaud 2006	Madagascar	+	1990s	clothing
Cling <i>et al.</i> 2005	Madagascar	0	1995–2005	clothing
Cling <i>et al.</i> 2007	Madagascar	0	1995–2006	clothing
Sivalingam 1994	Malaysia	+	1990s	electrical, electronics, textile and garment
Hein 1988	Mauritius	–	1980s	clothing
Fussell 2000	Mexico	–	1990s	textile, electronics and machinery-assembly
Chant and McIlwaine 1995	Philippines	+	1990s	clothing and electronics
Castro 1982	Philippines	+	1980s	clothing and electronics
Warr 1987	Philippines	0	1980s	clothing and electronics
Abeywardene <i>et al.</i> 1984	Sri Lanka	+	1980s	clothing

Note: + wages in EPZ higher than outside; 0 same or very similar level; – lower wages in EPZ than outside

Table 14 F2 Heterogeneity of results: labour conditions

Author		Country/Region	Decade	Main sector
<i>Unionisation</i>				
ILO 1988	0	Asia	1980s	various
Kabeer and Mahmud 2004	+	Bangladesh	2000s	clothing
Zohir 2001a	–	Bangladesh	1990s	clothing
Ver Beek 2001	–	Honduras	1990s	clothing
Sen and Dasgupta 2008	0	India	2000s	various
Mireri 2000	+	Kenya	1990s	clothing, printing, chemical and pharmaceutical
Cling <i>et al.</i> 2005	+	Madagascar	1990s	clothing
Glick and Roubaud 2006	+	Madagascar	1995–2005	clothing
<i>Health and safety</i>				
Zohir 2001b	0	Bangladesh	1990s	clothing
Liberato and Fennell 2007	–	Dominican Republic	2000s	textile and clothing
Ver Beek 2001	+	Honduras	1990s	clothing
Botchie 1984	+	Liberia and Ghana	1984	aluminium
Guendelman and Silberg 1993	0	Mexico	1990s	textile, electronics and machinery assembly
Hovell <i>et al.</i> 1988	0	Mexico	1990s	textile, electronics and machinery assembly
Attanapola 2005	–	Sri Lanka	2000s	clothing, shoes and toys
<i>Working hours</i>				
Kabeer and Mahmud 2004	–	Bangladesh	2000s	clothing
Alvarenga and Ligio 2001	–	El Salvador	1990s	textile and clothing
Aggarwal 2007	0	India	2000s	various
Sen and Dasgupta 2008	+	India	2000s	various
Mireri 2000	–	Kenya	1990s	clothing, printing, chemical and pharmaceutical
Botchie 1984	0	Liberia and Ghana	1980s	aluminium
Cling <i>et al.</i> 2005	+	Madagascar	1995–2005	clothing
Glick and Roubaud 2006	+	Madagascar	1990s	clothing

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Export processing zones (EPZs), also called free-trade zones, are one of the most common instruments of industrial policy in developed and developing countries. Despite their proliferation and spread across the world, there is little evidence about the impact of EPZs on employment and wages. More importantly, EPZs have been heavily scrutinised by civil society, often accused of employing a 'race to the bottom' strategy in terms of labour conditions. This systematic review collects, reviews and synthesises the evidence in relation to the impact of EPZs on employment, wages and labour conditions in developing countries – specifically on freedom of association, health and safety and working hours. The result of synthesising 59 studies suggests very mixed outcomes in relation to these labour outcomes.

Systematic Review Series

International Initiative for Impact Evaluation
London International Development Centre
36 Gordon Square
London WC1H 0PD
United Kingdom

3ieuk@3ieimpact.org
Tel: +44 207 958 8351/8350



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