The role of development finance institutions in promoting jobs and structural transformation:

a quantitative assessment

Marie-Agnes Jouanjean and Dirk Willem te Velde

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Acronyms

AfDB	African Development Bank
ATE	Average Treatment Effect
BIO	Belgian Investment Company for Developing Countries
CDC	Commonwealth Development Corporation
COFIDES	Compañía Española de Financiación del Desarrollo
DEG	German Investment Corporation
DFI	Development Finance Institution
DIAF	Development Impact Assessment Framework
DOTS	Development Outcome Tracking System
EBRD	European Bank for Reconstruction and Development
EECA	Eastern Europe and Central Asia
EDFI	European Development Finance Institution
EIB	European Investment Bank
FAO	Food and Agriculture Organization of the United Nations
FDI	Foreign direct investment
FMO	Netherlands Development Finance Company
FTE	Full time equivalent
GDP	Gross domestic product
GFCF	Growth fixed capital formation
GPR	Corporate-Policy Project Rating
ICT	Information and Communications Technology
IDC SA	Industrial Development Corporation South Africa
IFC	International Finance Corporation
IFU	Investment Fund for Developing Countries
ILO	International Labour Organization
LIC	Low income country
LMI	Low-middle income
MDB	Multilateral Development Bank
MIC	Middle income country
Norfund	Norwegian Investment Fund
ODA	Official Development Assistance
ODI	Overseas Development Institute
OeEB	Oesterreichische Entwicklungsbank AG (Development Bank of Austria)
OLS	Ordinary least square

PIDG	Private Infrastructure Development Group
Proparco	French Investment and Promotions Company for Economic Cooperation
PSM	Propensity score method
SBI	State Bank of India
SIFEM	Swiss Investment Fund for Emerging Markets
SOFID	Sociedade para o Financiamento do Desenvolvimento
Swedfund	Swedfund International
TFP	Total factor productivity
TP	Technical progress
UMI	Upper middle income
UNIDO	United Nations Industrial Development Organization
WDI	World Development Indicator
WLS	Weighted Least Square

Executive summary

This study examines the role of Development Finance Institutions (DFIs) in generating jobs, increasing labour productivity and promoting structural transformation. The paper first argues that job creation, productivity and structural change are the main development challenges for low income countries at present and DFIs have begun to acknowledge this. It then suggests ways in which the operations of DFIs affect employment creation and structural change, both through static (additionality and composition) and dynamic (through linkages and technical change) effects. The exposure of DFIs has increased significantly with the level of investments more than doubling over the 6 years to 2009.

The paper reviews a number of existing approaches to measuring the job impact of DFIs. DFIs used to report only the number of employees in DFI supported firms, but employment creation measures have become more sophisticated over time. DFIs are examining the indirect jobs generated, and also the induced effects and second order growth effects in case studies. This is very important because the employment effects in some type of projects (e.g. infrastructure) are mostly indirect, and hence reporting only direct jobs created would provide the wrong measure of overall importance of DFIs for job creation. DFIs (e.g. IFC, DEG, and PIDG) are now using production functions, input-output models approaches and case studies to estimate the job effects; all of these methods are associated with pros and cons. We have not yet seen a macro analysis of the impact of DFIs on job creation *and* structural change. This study fills that gap, although we also emphasise that the results in the paper are only initial, with significant scope for extensions.

This paper conducts a number of quantitative analyses. First, it provides production function based estimates of direct and indirect jobs created by a range of DFIs (IFC, EBRD, EIB, CDC, DEG, Proparco). It estimates how many jobs would be created assuming that DFIs provide additional investment into a country. Using a set of assumptions, DFIs are estimated to have created 2.6 million jobs in developing countries in 2007. In other words, according to this method, if DFIs would withdraw their funding, 2.6 million jobs would be lost.

The second and more substantial part of the estimations examines the effects of DFIs on labour productivity. The analysis uses a panel of 62 developing countries over time (using between 6 and 11 years of observations per country) and estimates a panel of labour demand equations where the effects of DFIs are incorporated through the effects on labour-augmenting technical progress. The regressions include panel and OLS estimations. We also provide estimations that allow for potential selection and endogeneity biases. In particular, we estimate the treatment effects of support by a DFI, accounting for the likelihood of it investing in a country with certain characteristics. This controls for situations in which DFIs invest in countries with lower levels of growth potentials in labour productivity. If we did not account for such effects we would obtain different impacts of DFIs on productivity.

We find that DFIs have a significant effect on labour productivity. Using the OLS equation (on a panel of countries), for each percentage point shift in the ratio of DFIs over GDP, the effect of DFIs on labour productivity is statistically significant and 3.4%. Using the equation that controls for selection bias the effect is significant 7.5%. Using the lower estimate, we find that DFIs have increased labour productivity by at least 3% in 21 low and middle income countries (and in Ghana, Kenya and Zambia the effects are of the order of 2.3%). The treatment effect (e.g. when a country receives support from a DFI) on labour productivity ranges between 0 – 15% and the average treatment effect is significant and around 6%.

This study has provided only initial results and these can be extended in a number of ways in the future. For example, future studies could do estimations (i) on the productivity and employment effects at the sector level; (ii) using a variety of measures of DFI exposure, and the variety of financial instruments they employ; (iii) using other estimations procedures and instruments; (iv) using methods that can help to understand which factors are conducive to greater effects; and (v) using different measures and data on employment.

1 Introduction

Structural change and employment generation are the two most important macro challenges for developing countries at present (UNECA, 2011). This study will examine in more detail the linkages between DFIs and job creation and productivity change by undertaking a quantitative study on how DFI investment affects labour augmenting technical progress. Only productivity change, structural transformation and innovation can secure development and reduce poverty in the long-run. A low-income country (LIC) that does not increase the level of productivity in its economy will eventually limit its own growth and income-generating potential, and find it difficult to navigate health challenges and environmental constraints. It may well fail to make the transition from a LIC to a middle income country (MIC). Job creation is crucial in the debate on reducing poverty (World Bank, 2012).

There is increased interest in the role of Development Finance Institutions (DFIs)[1] in promoting development (e.g. speeches by UK Secretary of State Justin Greening in March 2013), in part because their exposure is increasing rapidly (a doubling over 2003-2009) and in part because there is a growing recognition that aid agencies and DFIs need to create more impact with less funding (aid declined from 2010-2011 in constant prices). The past decade has seen an increase in impact assessments of the activities of DFIs at the micro and macro levels (e.g. Massa and Te Velde, 2011). There is however still very little evidence on the effects of DFIs on job creation and productivity (with exceptions including IFC, 2013, and case study examples by DEG and PIDG). This is despite the fact that DFIs such as CDC are aiming to make employment central in its impact measures.

It is therefore important to understand the impacts of DFIs on job creation and structural change. This study estimates the linkages at the macro level and is, to our knowledge, the first to examine the productivity effects quantitatively. The structure of the paper is as follows. Section 2 provides the conceptual background on structural transformation and employment generation and examines how DFIs can affect these. Section 3 reviews the various approaches that have been used so far to examine the effects of DFIs on job creation and structural change. Section 4 presents new empirical evidence on (i) the job effects and (ii) the productivity effects. Section 5 concludes.

[1] we define these as international development finance institutions providing finance (loans, equity etc.) to the private sector, e.g. IFC, CDC, FMO, DEG and parts of EIB etc. We exclude IDA and national development banks.

2 Development Finance Institutions, structural transformation and employment generation – conceptual background

2.1 Structural transformation, productivity change and employment creation

We focus on two key development challenges in low income countries: job creation and structural transformation. There has been a lack of employment generation and productivity growth in many developing countries. For example, ILO (2012) argues that the employment-intensity of growth in Africa has been low and declining. Employment growth was 3.1% per year over 2002-2007, and declined to 2.8% per year over 2008-2011. Labour productivity growth in sub-Saharan Africa has been lower than in other developing country regions over the past decade, at 2%a year. The gap in output per worker between SSA and developed countries has not narrowed since 1991, albeit with varying performances across countries.

Ensuring high and sustained economic growth rates combined with increases in social development in low income countries (LICs) depends on productivity changes based on widespread economic diversification and structural transformation (Hall and Jones, 1999; Lin et al, 2011; UNECA, 2011). The achievement of development goals will therefore depend on the ability of countries to foster entrepreneurship and promote innovation, including the spread, adaptation and adoption of pre-existing know-how and techniques, services, processes and ways of working. Unfortunately, too much of the growth in low income countries (esp. in African countries) in recent decades has not led to structural changes (see e.g. Macmillan and Rodrik, 2011), although some changes have occurred recently (IMF, 2012).

Innovation and technological development involve a process of learning and building up technological and human capabilities (Lall, 2001). This process is beset by market and co-ordination failures; the process of addressing these challenges needs to be facilitated by a range of actors including DFIs. Support for innovation can also help employment (see box 1).

Box 1: **Links among innovation, productivity and employment.**

There is much recent debate on the links among innovation, productivity and employment. There are two types of innovation. *Process* innovation implies that fewer workers are needed to produce the same level of outputs. However, the resulting reduction in costs may lead a firm to expand output as it gains market share, which could on balance, lead to more job creation. *Product* innovation, increasing the number of products, leads to higher labour demand and labour supply, although it might also displace some jobs through creative destruction.

In general, the demand for labour depends on level of output, real wage, degree of substitutability between capital and labour, and the rate and level of technical progress. The precise employment effects of (skill-biased) technical change will depend on substitutability between skilled and unskilled workers. That is, the elasticity of labour demand with respect to labour-augmenting technical progress (TP) is the sum of a substitution effect (elasticity of substitution) and a scale effect (price elasticity of output demand times cost reduction effect of TP). Employment increases with TP when (i) capital and labour are easily substitutable; (ii) cost savings are passed on to consumers and (iii) product demand is price elastic.

Recent research finds positive links between employment and innovation. For example, new research suggests that (*process*) innovation can lead to more employment. Autor (2013) argues that an innovation displaces humans from some jobs, but makes them more productive in others. Katz and Margo (2013) argue that technological advances have historically been good for employment (referring to labour-market trends in the 19th and 20th centuries). In recent decades, computerisation and automation have displaced middle-skilled workers but, at the same time, employment among high- *and* low-skilled workers has increased. Early industrialisation in the UK had the same type of effects. Middle-skilled artisans, like trained weavers, were put out of work by industrial textile production, whilst the employment of less-skilled factory workers and white-collar factory managers steadily improved.

Positive links between innovation and employment are also observed at the firm level. Dutz *et al*. (2011) used a sample of more than 26,000 manufacturing establishments across 71 countries (both developed and developing). Their analysis confirmed that (i) bigger enterprises are more likely to invest in R&D, innovate and have higher total factor productivity (TFP); (ii) enterprises that are incorporated are significantly more likely to do R&D, and incorporation is a plus factor for process innovation by old and large firms and for TFP of micro and mature firms; (iii) foreign borrowing is a strong and statistically significant correlate of R&D activity and TFP for small and young establishments; and (iv) firms that export are significantly more likely to engage in R&D and innovation, and have higher TFP.

2.2 Development Finance Institutions

Te Velde and Warner (2007) review the mandates of DFIs suggesting there DFIs have a number of objectives including (i) to invest in sustainable private sector projects; (ii) to maximise impacts on development; (iii) to remain financially viable in the long term; and (iv) to mobilise private sector capital. Some DFIs provide finance (e.g. loans, guarantees, equity investment) to the public sector (e.g. most parts of the multilateral development financial institutions, such as the MDBs, e.g. the African Development Bank (AfDB)), but we discuss DFIs that finance only the private sector (e.g. IFC; CDC; DEG). The shareholders (donor countries) provide callable capital/endowments to the DFIs, which they use to provide such loans and equity positions. These can leverage in other sources of finance, including private finance. In this paper, we focus on DFIs that support the private sector. The size and sectoral composition varies greatly by DFI, see table 1.

Table 1: **Investment of DFIs, total and by sector, 2009 (%)**

	Investment in mn US$	**Sector (share of portfolio)**				
		Financial	*Infrastructure*	*Agribusiness*	*Industry*	*Other*
BIO	154	45	20	5	30	N/A
CDC	810	23	34	6	18	19 (i)
COFIDES	211	1	45	5	47	3
DEG	1410	35	19	13	27	6
Finnfund	208	19	28	1	44	7
FMO	1266	42	24	3	30	2
IFU/IFV/IØ	145	5	10	15	63	8

Norfund	158	23	55	5	11	5
OeEB	107	100	0	0	0	0
PROPARCO	1557	45	36	4	12	2
SBI	4	21	13	18	47	0
SIFEM	47	18	3	N/A	79	N/A
SIMEST	283	2	8	8	78	4
SOFID	4	N/A	N/A	N/A	100	N/A
Swedfund	60	8	22	1	64	5
EBRD (**)	8231	36	37	8	18	N/A
EIB (**)	2396	2	65	10	23	N/A
IFC (**)	12664	48	25	2	25	N/A

Notes:

Other sectors include: global financial markets; global manufacturing and services; health and education; oil, gas, mining and chemicals; sub-national finance; information and communication technology; etc. (i) In the case of CDC, for example, the 'other' sector category includes health care 8%; mining 6%; others 6%.

(**) For sectors and instruments we used commitments.

BIO = Belgian Investment Company for Developing Countries; Finnfund (Finland); IFU = Industrialisation Fund for Developing Countries, IFV = Investment Fund for Emerging Markets, IØ = Investment Fund for Central and Eastern Europe (Denmark); OeEB = Development Bank of Austria; SBI = Belgian Corporation for International Investment; SOFID = Portuguese Development Finance Institution.

Source: European Development Finance Institutions (EDFI) annual report, annual DFI reports and own calculations, in Kingombe et al. (2011).

Te Velde (2011) finds that the private sector support by DFIs globally has grown rapidly from annual commitments worth US$ 15.4bn in 2003, to US$ 21.4bn in 2005 and US$ 33bn in 2009. This represents more than a doubling in annual commitments over the 6 years. There are 26 developing countries where investment by three DFIs (IFC, EIB and CDC) together have averaged between 2% and 12% of total domestic investment for the period over which data were available.

2.3 Links between DFIs and job creation and structural transformation:

There are a number of channels through which DFIs can affect employment and productivity change. We divide these into static and dynamic channels of effects.

Static and direct effects

DFIs affect job creation directly by being additional and they can have a direct effect on productivity through changing the composition and hence the economic structure of an economy.

Additionality – DFIs aim to be additional to other financial flows and domestic investment. It is often in their mandate that DFIs are additional, e.g. they need to solve market failures and provide finance in frontier markers where the private sector does not go or does not go sufficiently. DFIs often talk about catalytic or leverage effects of their investment on other source of finance. To the extent that DFIs are additional, they will increase the overall level of economic activity, and will probably increase employment depending on technologies used. Employment generation based on direct effects is *bounded* at one extreme by the number of jobs employed by firms supported by DFIs. In practice, the direct effects will be lower because (i) not all activities of the firms will be due to DFI support; and (ii) some other firms/ jobs might be displaced.

Composition effects – With or without net job effects, DFIs can increase country-wide productivity and hence affect structural transformation by supporting activities that are more innovative and productive than the average level in the economy (e.g. pioneer sectors). Of course, the more capital intensive the projects and sectors are, the less likely they are to generate significant employment. In practice though, innovation and employment can go together (see previous section).

Dynamic and indirect effects

In a dynamic sense, DFIs also create jobs through forward and backward linkages (and the induced effects these generate) and can foster technical change in companies, with possible spill-over effects for the sector and the whole economy.

Forward and backward linkages - DFIs can support activities (e.g. manufacturing firms) that have indirect effects through the need for inputs provided by suppliers (backward linkages). This can lead to employment change in suppliers who in turn can generate spending and employment effects. The DFI supported activities can also lead to growth and employment change upstream.

(labour-augmenting) technical change - DFIs set economic, social and environmental performance standards, have representatives on company boards, direct fund managers, provide technical assistance and act as a port of knowledge through which investee companies can adopt new product and process innovation. Bloom and Van Reenen (2007) suggest that firm upgrading could occur through managerial changes. DFIs also catalyse new capital with embodies new technologies and hence fosters technical change. Thus DFIs can increase productivity in the investee company.

Such productivity increases can over time increase productivity in other companies in at least two ways. Firstly, DFI supported investment in infrastructure (ports, roads, energy) can increase productivity in a range of firms which can support economic activities and jobs. Secondly, other firms can learn through linkages and imitation. Normally, the spill-over effects depend on a number of factors including policies, institution and local supplier capacity. The productivity effects can be neutral to the skill level, but could also be biased toward certain skill levels. In the short-run investment backed by a DFI could reduce employment, but as suggested in section 2, in the long-run this could be essential to safeguarding the jobs left behind. Whilst there has been very little research on how DFIs affect growth and productivity, the literature on the effects of FDI is more substantial and offers useful insights (see box 2). The effect of productivity change on employment growth depends on various factors (see section 2).

Box 2: **FDI and productivity: a brief overview**

Most macro and meso studies have found positive and significant correlations between FDI and GDP per capita or productivity, often because FDI tends to locate in higher value-added industries or segments. It is not clear whether productivity increases at the macro level are driven by spill-overs to and learning effects in local firms, or only by a composition effect. Macro-economic studies also examined the conditions under which FDI affects growth. Some studies argue that the contribution of FDI to growth is strongly dependent on the conditions in recipient countries, e.g. trade policy stance (Balasubramanyam *et al.,* 1996) or human resource policies. Borensztein *et al* (1998) suggest that the effectiveness of FDI depends on the stock of human capital in the host country. Xu (2000) estimates a growth equation for different samples of countries and finds a significant positive effect of FDI on growth in samples of countries with higher levels of human capital.

The impact of FDI at the macro level is not necessarily homogenously positive or negative. Micro-level studies (e.g. Haddad and Harrison, 1993; Aitken and Harrison, 1999; and Djankov and Hoekman, 2000) find that the productivity level of foreign firms is higher than that of domestic firms, but also that productivity growth in domestic firms is lower than it would have been in the absence of foreign firms (in Morocco, Venezuela, and the Czech Republic), or in other cases where there are positive spill-overs (e.g. Mexico). The negative effects are sometimes associated with market stealing arguments, while positive effects relate to learning effects in local firms with much lower productivity levels than their foreign counterparts in the same sector. The overall effect of FDI on the host economy is perhaps weakly positive, though there are studies where the impact is negative and cases where the impact is positive.

3 Assessing the impact of DFIs on job creation and structural transformation – methods used so far

There are a number of methods that try to measure the impact of DFIs on job creation effects and structural transformation. This section discusses these approaches and examines the advantages and disadvantages of each. IFC (2013) distinguishes between direct jobs (jobs in entities directly supported), indirect jobs (jobs supported through suppliers), induced effects (jobs supported through increased spending power from increased jobs), second-order growth effects (jobs created through productivity effects) and displaced jobs (jobs displaced by the DFI supported job). Whilst there is some harmonisation to examine the direct jobs, there is not one acceptable way of examining the indirect job effects.

Direct employment effects

DFIs assess the direct micro level impacts of their investments on a regular basis. Table 2 provides estimates for five DFIs. There are a number of different methods in use. For example, the DEG and several other EDFIs use the GPR (Corporate Policy Project Rating)[2] system, the IFC use the DOTS (Development Outcome Tracking System)[3], and the FMO also uses a scoring system[4]. There are differences in the detail, but also several commonalities. For example, most collect (and report on) the direct employment effects in the investee companies.

Whilst such indicators appear more or less comparable, they are not on their own a good measure of a DFI's total impact as this will depend on the counterfactual and many other indirect impacts. For example CDC (2012) reports that the number of jobs provided by companies in which CDC's capital is invested rose from 676,000 in 2008 to 976,000 in 2011. But not all activities of the companies and the jobs supported are directly because of CDC support and some other firms and jobs might be displaced, whilst other jobs are created indirectly. For this reason, we need to treat direct jobs created with caution, and it should not be the only information on which strategy is based.

Table 2: **Direct jobs supported by DFIs (portfolio / created in 2011)**

DFIs	Direct jobs supported (by portfolio in 2011)	Direct jobs created in 2011
IFC	2,500,000	200.000
CDC	976,000	
DEG	800.000	110,000
Proparco		89,000
IFU	4,500	

Source: Massa (2013), DEG, IFC, Proparco Data refer to jobs supported by portfolio or data on new jobs created in 2011. Note that these include only direct jobs and do not take into account indirect jobs.

[2] http://www.deginvest.de/deg/EN_Home/About_DEG/Our_Mandate/Development_Policy_Mandate/Corporate-Policy_Project_Rating.jsp

[3] http://www1.ifc.org/wps/wcm/connect/Topics_Ext_Content/IFC_External_Corporate_Site/IDG_Home/Monitoring_Tracking_Results/Tracking_System

[4] http://www.fmo.nl/development-impact

DFIs have recently been engaged in a harmonisation exercise on employment measures. They intend to separate permanent and temporary employment. Permanent employees include the number of direct employees (by gender) in the client company as of the end of the client company's fiscal year, including part-time and seasonal jobs on a pro rata / FTE basis. Temporary jobs are those required for construction, DFIs also agreed the need to track both direct and indirect employment, including disaggregation by gender.

Several DFIs provide examples on how direct employment effects vary by sector. CDC (2012) reports that sectors such as 'agribusiness and food' are among the smaller sectors in CDC's portfolio in terms of investment, but they are among the more labour intensive industries and together represent 35% of the total employment with an average of 2,200 and 3,500 employees per investment, respectively. Conversely, 'infrastructure' is the largest single sector CDC's portfolio, representing 19% of the total but providing just 5% of jobs, or around 1000 jobs per investment (after construction).

So far, DFIs have put less emphasis on estimating job impacts beyond the direct employment, but direct jobs may only be a small part of the total job effects e.g. in infrastructure projects.

Production function based estimates

Löwenstein (2011) and Kim *et al* (2011) propose to use a production function approach to estimate the direct and indirect macro employment effects of DFIs. In this approach, DFIs are assumed to increase gross fixed capital formation which increases GDP which increases employment. It is based on neoclassical growth theory which includes various assumptions and conditions on factor markets and characteristics of the aggregate production function at the country level.

DFIs support operations in countries that face constraints and imperfections in their capital markets. In these countries, capital is fully employed, but there is unemployment in the labour market. The labour force and capital stock grow at same rate. Then we can add DFI finance to increase investment and using some functional parameters, it is possible to estimate growth and employment effects. This approach can be applied at project / firm level and at country level.

These types of calculations have pros and cons:

- The employment changes include imputed changes due to second round effects or backward linkages, e.g. when a change in investment in one sector/firm creates jobs elsewhere in the country through direct linkages.
- But the employment changes are imputed, not actual changes. They do not take into account, for example, the actual number of jobs created directly and reported by DFIs.
- The analysis assumes homogenous production functions that do not vary across countries or sectors. In fact, we know that parameters do vary across countries, and that some sectors are associated with greater direct (labour intensity) and indirect effects (greater linkages). In addition, the elasticity of substitution varies. The greater the elasticity, the fewer jobs that would be created.
- While indirect and direct effects are included, those that occur through changes in technology (technical change or structural transformation) are not.
- The data are often based on commitments from DFIs, not actual investments.

Some of these shortcomings could be overcome with better data, e.g. on sectoral composition or through using different elasticity of substitution.

Input-output models

The input-output model is one method that has been used to examine the multiplier effects of DFIs at national and sectoral level. These models take into account linkages across sectors and can therefore quantify the direct, indirect and induced effects of DFIs on employment and GDP. Input-output models tend to be demand-led models, e.g. suppose total final expenditure increases, what would be the direct effect on output in different sectors and the factors of production (incl. labour) and what would be the indirect effects of that (via the effects on sectors supplying those sectors) and induced effects (the increased consumption by workers in a sector benefiting from a change in final expenditure). Recently, these models have been used on the supply-side and applied to DFI investment (see e.g. Kapstein *et al*, 2012): suppose that investment increase, what happens to GDP in various sectors, given employment intensities, directly and indirectly.

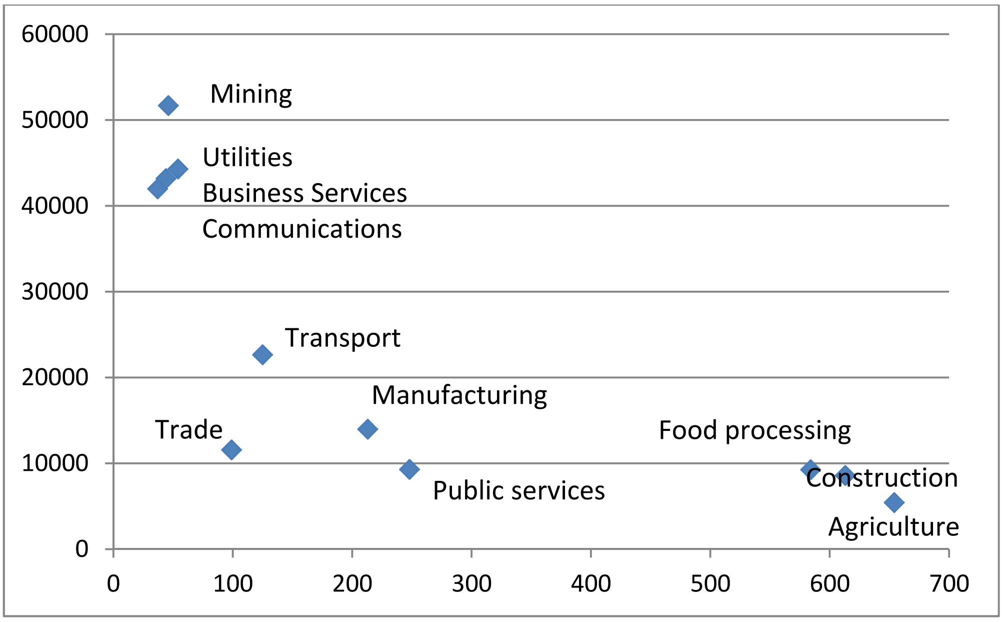
These methods can be applied to various sectors. Different sectors have different types of linkages. Table 3 shows some broad comparisons of types of expected impacts (based on IFC classifications, see e.g. IFC (2012).

Table 3: **Relevance of DFI effects by type of effect and by sector**

Sector of DFI investment	Direct job effects	Indirect job effects (static and dynamic)	Induced and second order growth effects
Manufacturing such as garments	Very important (but depends on type of manufacturing)	Potentially important	Less important
Tourism	Medium important	Very important	Less important
Infrastructure	Less important	Mostly temporary	Very important

IFC (2013) and Kapstein *et al* (2012) confirm that there can be tensions between creating large numbers of jobs and the GDP contribution or value-added of such jobs. Investing into capital abundant sectors may lead to few additional jobs in the short-term, but may have the greatest potential for long-term “transformational” effects such as increases in labour productivity which are the source of higher incomes. Investments in agriculture support the largest quantity of employment in the short-run, but given the low value added per job these investments may not contribute much to the long-term economic development. This is shown in figure 1 below.

Figure 1: **Trade – off between value addition per job and number of jobs per investment**



Source: data from Kapstein *et al* (2012) and relate to Tunisia. Jobs include direct and indirect effects based on input-output models. Value addition (US$) per job (vertical axis) and number of jobs per US$ mn investment (horizontal axis)

If such data are representative for all developing countries it would suggest that DFIs such as DEG, EIB, Swedfund and Finfund that are relatively more exposed to industry and agribusiness (Table 1) have the largest employment generation effects, whilst other DFIs (e.g. CDC, EBRD, IFC, Proparco) tend to have a relatively larger GDP generation potential per unit of investment.

These types of calculations have pros and cons:

- The methods can be used relatively easy to obtain multiplier impact on direct and indirect jobs of investments;
- It uses a constant productivity ("Leontief" or fixed-proportion) production functions, and cannot be used when DFIs lead to structural change over time;
- Assumes that same effects of different types financing or types of beneficiary firms; and
- It needs good sectoral input-output databases.

Econometric studies

Two types of studies have been used in the context of impact of DFIs. At the macro level, Massa (2011) examines the growth effects of DFIs in detail. She estimates:

$GDP\ per\ capita\ growth_{i} = f\ (DFI_{i},\ other_{i})$

where *other* includes foreign direct investment (FDI), trade, government expenditure and the inflation rate. Massa provides an analysis for 101 countries over 1986-2009, which shows that DFIs have a stronger growth impact in lower-income than in higher-income economies. A 10% increase in multilateral DFIs' commitments increases per capita gross domestic product (GDP) growth by 1.3% in lower-income countries and by 0.9% in higher-income countries. At the micro level, PIDG (2012) proposes to use firm level econometrics to

estimate the impact of more reliable and greater quantity provision of electricity on firm level productivity. Fewer power outages improve productivity so that firms save costs, increase productivity, increase sales and hence increase employment.
The macro and micro studies suggests that DFIs can increase productivity and help the process of structural transformation. So far there have not been any macro studies that examine the impact of DFIs on labour productivity or job creation

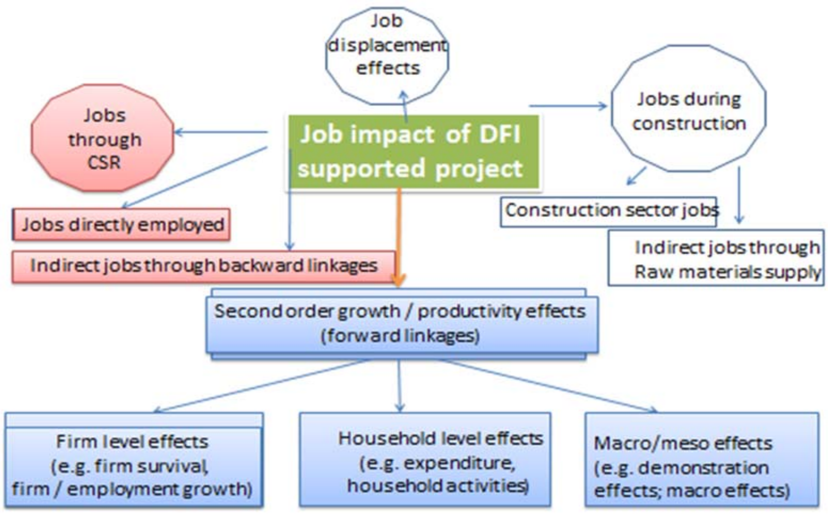
These types of econometric calculations are associated with pros and cons, e.g.:

- The estimations help to understand changes in technology (technical change or structural transformation) in contrast to most other approaches with are concerned with the direct and indirect effects.
- The techniques are very data intensive and need to pay a lot of attention to econometric methods and identification strategies.
- National level empirical estimate assume the same average effect over time, across countries and across sectors, although depending on data availability these assumptions can be relaxed.

Case studies

DFIs have undertaken a range of case studies (see e.g. IFC, 2013) which combine quantitative and qualitative information at the individual investment level. One recent example is by PIDG (2012). Figure 1 illustrates the typical effects such advanced case studies would consider. These studies can provide useful information at individual investment level and the types of effects that matter for the relevant sector. Generally, for light manufacturing such as garments, *direct* job creation in the light red areas will be most important. For tourism, the light red areas are also important but they include *indirect* jobs through linkages which can be significant. The light blue boxes represent growth effects e.g. through productivity effects, and these will be important for infrastructure projects.

Figure 2: **Job creation through DFI activity**



Source: building on PIDG project evaluation proposal

These types of studies have pros and cons:

- The methods can be used to obtain precise job effects of individual investments and verify multiplier impacts or aggregate econometric impacts;
- However, it is difficult to account for the counterfactual which can only be estimated using models; and
- Resources are limited, so it is difficult to this for all investments.

Summary

Table 4 summarises the various approaches.

Table 4: **Pros and cons of assessment methods for job creation effects of DFI projects**

Approach	Positive aspects	Negative aspects	Possible data sources
Direct employment in DFI supported projects	Directly measurable	Does not measure displacement effects, indirect, induced or second-order growth effects Might overstate effects directly attributable only to DFIs	Company reports
Macro production function approaches multiplier analysis	Can be used at macro level to see how (DFI) investment leads to output changes (could use ICOR, C-D / CES / Leontief / TFP approaches) which could then lead to employment effects. Useful for quick assessments at aggregated level, for manufacturing, but less useful when the quantity of "output" is not main or only factor of interest.	Involves use of assumptions, estimations of production functions, and employment intensities. Does not measure second order growth / productivity effects	Requires (sectoral-level) national accounts
Input-output models	Useful to examine backward linkages across industries in traditional industries and hence indirect employment , could be linked to different types of skills, tax etc. to get a SAM Useful to obtain multipliers by sectors relatively easily.	Not useful in case of transformative changes in production structures (e.g. large scale infrastructure investments) or when inputs are price dependent and substitutable, or when behavioural links change (in which case input-output coefficients would change). Measures expected impacts..	Labour force surveys National accounts
Firm level / national level econometrics	Useful to examine the empirical effects of the level and quality of services supply on firm performance amongst a range of factors (and hence the induced effects, including on employment)	Data intensive (needs panel data), needs good identification strategies.	Existing firm level surveys (e.g. WB enterprise survey) National databases
Household level econometrics	Useful to examine the importance of DFI supported services in the household budget	Data intensive (panel data)	Household level surveys
Case studies	Useful to get detailed impact to verify multiplier effects or aggregated econometric effects.	Data intensive, difficult to obtain macro effect and counterfactual	Field work

4 Empirical specification and estimation results

This section uses modelling techniques to analyse (i) the direct and indirect employment effects of DFIs at the national level and (ii) the effects on labour productivity at the national level. For a description of the data see appendix A.

4.1 The direct and indirect effects of DFIs on employment creation

Estimates of the macro effects of DFIs on employment should consider indirect and induced effects, exclude jobs not related to DFI support, and net out displacement effects. To obtain crude estimates on the direct and indirect macro employment effects of DFIs through backward linkages, we follow the production function approach by Löwenstein (2011) and Kim *et al* (2011). In particular, we can use the Cobb-Douglass production function to estimate the macro employment effect of investments by DFIs. In this approach, DFIs are assumed to increase gross fixed capital formation which increases GDP which increases employment.

Modelling approach

The modelling approach is based on neoclassical growth theory, using various assumptions and conditions of factor markets, as well as the characteristics of the aggregate production function at the country level. Some of the assumptions will need to be tested in later research, but we follow the analysis to get initial estimates that can then be refined at a later stage. DFIs support operations in countries that face constraints and imperfections in their capital markets. In these countries, capital is fully employed, but there is unemployment in the labour market. Initially, the labour force and capital stock grow at same rate. Growth in production is assumed to follow a linear-homogenous Cobb-Douglas production function, and we set the labour share to 0.67 (2/3). Although we are focusing our analysis on lower- and middle-income countries, evidence supports this assumption in developed countries also. In short, we assume all countries follow a Cobb-Douglass function, where $Y = AK^{\alpha}L^{1-\alpha}$, with $\alpha = 1/3$.

According to these assumptions, growth of the capital stock can be written as:

$$gK = \frac{I}{K} = \frac{I/Y}{k} \quad \text{with} \quad k = \frac{K}{Y} = \alpha \frac{I/Y}{gY} \qquad (1)$$

Changes in the capital stock will then lead to changes in GDP growth which will translate into employment growth, as follows:

$$gL = \left(\frac{1}{1-\alpha}\right) gY = \frac{2}{3} gY \qquad (2)$$

With g the growth rate, *Y* real GDP, *K* the real capital stock, *L* employment and *I* gross fixed capital formation (investment).

We use growth projections using observable data on GDP, GFCF (Growth fixed capital formation) and employment, obtained from the World Development Indicator (WDI) using data on participation rates and population data. These growth projections include the effect of DFIs' investments in the economy, where we assume that each dollar of DFI investment changes the capital stock by one dollar. Using data on DFI investment gathered from various institutions, we construct two scenarios: (i) a growth and derived employment scenario with DFI investment and (ii) a growth and derived employment scenario without DFI investment (the counterfactual). Using (1) and (2) we are then able to infer the change in employment due to DFIs' investments.

Estimation results

We present estimates for a number of DFIs (EIB, CDC, IFC, PROPARCO, DEG and EBRD), and then for EIB, CDC, and IFC separately in the tables in appendix B. The final columns (in tables B1b, B2b, B3b and B4b) calculate the changes in employment due to DFI investment.

This particular set of estimation finds that the selected DFIs created 2.59 million jobs in 2007 in over 70 developing countries. This includes direct and indirect effects of the increase in investment accounted for by DFIs. The numbers of jobs created varied amongst DFIs from 1.26M by EIB, to 1.23M by IFC, and 0.12M by CDC, reflecting the amounts invested in each country in 2007. The numbers of jobs created varied by country depending in part on the extent of DFI investment. DFI investment created 515,000 jobs in Uganda, 98,000 in Kenya, but only 9,000 in Bangladesh. The costs of creating a job varies: e.g. in Malawi it takes 1,000 USD to create 0.15 jobs, or around 6,500 USD per job created; but 1,000 USD creates 0.60 jobs in Vietnam (1,667 USD per job), and 1.82 in Uganda (550 USD per job).

As a check on robustness, the estimates for the effects of IFC in Ghana are 18,406 jobs created in 2007 at a cost of 11,000 USD per job. The IFC (2013) suggests that IFC operations created 36,700 jobs in Ghana in 2011 at a cost of 8,620 USD per job. The previous section has already discussed several pros and cons of the approach and we do not repeat it here. A key challenge though is that the employment effects are imputed changes, not actual changes and while indirect and direct employment effects are included, the effects that occur through changes in technology (technical change or structural transformation) are not.

Extension of the above approach would include to (i) estimating *actual* impact on investment and used actual changes in gross fixed capital formation as the shock variable; (ii) allow for different effects of different DFIs in different sectors in different countries and (iii) incorporating effects on structural change. Te Velde (2011) provides insights into the first issue and finds that a unit of DFIs sometimes has catalytic effects and leverages in more than one unit of domestic investment, but sometimes less. Input-output models provide insights into sectoral extension (Kapstein *et al*, 2012). But so far there have not been any studies examining the impact of DFIs on structural change and productivity.

4.2 The effects of DFIs on productivity

Theoretical background

In order to test the effects of DFIs on structural change and the productivity of jobs, we derive and estimate a labour demand equation which incorporates the effects of DFIs on productivity and structural change. In doing this, we follow Barrell and Te Velde (2000) and Kingombe and Te Velde (2012) who use a two-factor CES production function with employment (L) and capital (K)

$$f(L_t, K_t) = \left\{\lambda(\psi_{Lt} L_t)^{\rho} + (1-\lambda)(K_t)^{\rho}\right\}^{\frac{1}{\rho}} \tag{3}$$

Where $\varphi_{Lt} \equiv \ln \psi_{Lt}$ is a function of labour efficiency units, and the parameter $\rho < 1$.

The labour efficiency index can be interpreted as accumulated human capital or the skill-specific technology level. The elasticity of substitution between *L* and *K* is $\sigma = 1/(1-\rho)$ Unlike in the case of a Cobb Douglas function, the elasticity of substitution can differ from 1.

In neo-classical theory, the technology level changes exogenously. However, in reality the pattern of technical change can shift (endogenous technical change), depending on such factors as investment by DFIs (as explained in section 2). For example, DFIs can support and transfer knowledge to high productivity firms that can also act as a pool of knowledge for other firms so that DFIs can lead to greater labour productivity through greater spill-overs and through aggregation.

For any country we model the effects of DFIs on labour-augmenting technical change as follows:

$$\varphi_{Lt} \equiv \ln \psi_{Lt}; \varphi_{Lt} = \gamma_{1L} + \gamma_{2L} DFI_t; \tag{4}$$

where *t* is time. Then using the first-order condition that factor productivity equals the real factor price we can derive a formula for labour demand (and also capital demand which we do not show):

$$\ln\left(\frac{L_t}{Y_t}\right) = \sigma \ln(\lambda) - \sigma \ln\left(\frac{w}{P}\right)_t + \gamma_{1L}(\sigma - 1)t + \gamma_{2L}(\sigma - 1) DFI_t + \varepsilon_i \tag{5}$$

When $\sigma < 1$, we expect the coefficient on DFIs to be negative when DFIs increase labour productivity (and positive if they decrease productivity). We estimate later that σ is around one third to one half.

Note that equation 5 is a labour demand equation which explains labour intensity, e.g. the units of labour required to produce some level of output. This is the inverse of labour productivity and according to the model, labour productivity increases (labour intensity decreases) when capital substitutes for labour (e.g. when the real wage increases) or when labour augmenting technical change increases e.g. through DFIs. It is the latter effect we are most interested, e.g. how do DFIs affect labour productivity through increasing labour augmenting technical change?

Econometric methodology

We use various estimation techniques to identify the effect of the support by DFIs in country *i* on labour productivity according to the relation described in equation (5). According to this equation (a labour demand equation), the labour intensity of production is explained by the real wage and labour -augmenting technical change (which is captured by a country specific trend and the impact of DFI ad in (4)).

We rewrite equation (5) as the following:

$$\mathrm{y_{it}} = \delta + \alpha \mathrm{DFI_{it}} + \beta \mathrm{X_{it}} + \tau_i + \theta_t + \mathrm{C_i} + \varepsilon_{it} \tag{6}$$

where $\mathrm{y_{it}}$ is the inverse of labour productivity (labour intensity of production) in country *i* at time *t* (we therefore stack a series of labour demand equations for a number of countries). $\mathrm{X_{it}}$ represents relevant individual controls that may affect the dependent variable. The variables C_i and θ_t are respectively country and time fixed effects, τ_i is a country specific time trend and ε_{ik} is the error term. The estimated average impact of support by DFIs is the estimate α. As described in the previous section, we expect α to have a negative sign, when a DFI has a positive impact on labour productivity or structural change implying that for a given unit of production less labour is required.

We measure DFI support in three ways. First, we set a dummy variable (variable D_{it}), as a treatment variable, equal to one if there is a DFI investment at time *t* in country *i* and equal to zero otherwise. This captures the signal effect of support by DFIs rather than the effect of its intensity. Second, we use the value of the investment by DFIs at time *t* in country *i*. Because of zeros in DFI investments in the database we will be using the direct value instead of the logs to avoid losing information. Finally, we use of the ratio of the value of DFIs' investments in the country *i* at time *t* over GDP, consistent with previous studies on the effect of DFI or FDI. Ideally, we would have the ratio of employment under control by DFIs as a ratio of total employment, but this is not available. The ratio of DFI investment over GDP is a measure of the importance of DFIs in an economy. In using this ratio we follow the use of the FDI to GDP ratio in econometric studies on the effects of FDI.

We initially estimate equation 6 using OLS estimation. However, there might be various challenges that hinder a proper identification of the true effect of DFIs on labour productivity when using simple OLS. One problem in evaluating the impact of DFIs is that the selection of countries in which DFIs invest is not random. This introduces difficulties in estimating the effect of DFI support because DFI variables might be arbitrarily correlated with the error term or unobserved heterogeneity. DFIs are supposed to support countries in which the investment environment is too risky for the private sector to invest by itself.

It is possible that (i) labour productivity is lower in countries where DFIs are active than in countries in which they do not invest (but also vice versa, for conflict affected countries); (ii) growth in labour productivity in countries in which DFIs invest could be initially lower than growth in labour productivity in countries in which they do not invest due to unobserved reasons; and (iii) the expected increase in growth in labour productivity in countries in which DFIs invest is higher than without DFIs investment but remains lower than growth in labour productivity in countries in which they do not invest.

We use various techniques to deal with this potential bias. We will first treat the issue as an endogeneity problem. With this approach, we consider DFI intervention to only depend on observable exogenous variables. Accordingly, we make use of an Instrumental Variable (IV) estimation to reveal the effect of DFIs' interventions and control for the endogeneity of the intervention of DFIs. We focus on the dummy variable D_{it} .We have a dummy endogenous variable model, allowing us to make use of a Heckman model (Heckman, 1978) for which we use a standard IV method in which the probability of having an intervention by a DFI $Prob(D_{it})$ is estimated in the first-stage probit model. The estimated probabilities are then used as an instrumental variable in the second-stage structural model.

$$y_{it} = \delta + \alpha Prob(D_{it}) + \beta X_{it} + \tau + \theta_t + C_i + \varepsilon_{it} \qquad (7)$$

with $Prob(D_{it}) = \lambda + \gamma Z_i + \mu_i + \rho_t$

We use the same covariates X_{it} as previously defined. The vector Z_i includes the same covariates in addition to covariates that are expected to influence the decision of DFIs to invest in the country.

The Heckman procedure also controls for the sample selection problem. This problem (e.g. DFIs choose to invest in countries that have higher or lower labour productivity) arises because of the non-experimental, non-random setting of DFI support. We adopt impact evaluation methods controlling for selection bias and make use of various methodologies based on a "treatment effect" approach to the analysis of the impact of DFI support on labour productivity following the methodologies developed in Cadot *et al* (2012) looking at the impact of an export support policy on exporting in Tunisia. Propensity score method (PSM) techniques, first described by Rosenbaum and Rubin (1983), are widely used in programme evaluation when the experimental context is non-random and does not allow for a full comparability between a treated and control group. The underlying approach is to recreate an experimental setting allowing comparing changes in an outcome for DFIs intervention beneficiaries and a control group identified as similar according to observable characteristics.

We define *T* and *C* respectively as the treatment and control groups and *S* their common support [5]. A specificity of our setting is that treatment varies over time. As in Cadot *et al* (2012) we define $t(i)$ the year in which DFIs invest in the country *i* .Therefore, the treatment variable D_{it} will be defined as the following:

$$D_{it} = \begin{cases} 1, & \text{if } i \in T \text{ and } t = t(i) \\ 0, & \text{otherwise.} \end{cases}$$

We estimate the Average Treatment Effect (ATE), the difference in labour productivity between the treated and control groups. Formally, this means looking at the difference

$$\mathbb{E}(\mathrm{Y_{it}}|\mathrm{T_{it}} = 1, \mathrm{X_{it}}) - \mathbb{E}(\mathrm{Y_{it}}|\mathrm{T_{it}} = 0, \mathrm{X_{it}})$$

Using treatment effect approaches, we examine the effect of the treatment both on labour productivity and afterward on the difference in labour productivity growth between treated and non-treated. Using PSM in a difference-in-difference setting allows in addition to control for unobserved time-invariant pre-programme difference across countries. Formally, this means looking at the difference

$$\mathbb{E}\left(\Delta\mathrm{Y}_{\mathrm{i,t}(i)}\middle|\mathrm{T}_{\mathrm{i,t}(i)} = 1, \Delta\mathrm{X}_{\mathrm{it}(i)}\right) - \mathbb{E}\left(\Delta\mathrm{Y_{it}}\middle|\mathrm{T}_{\mathrm{i,,t}(i)} = 0, \Delta\mathrm{X}_{\mathrm{it}(i)}\right)$$

We first estimate the propensity score as the conditional probability of treatment $Prob(D_{it} = 1|Z_i)$

As in Cadot *et al* (2012) further challenges arise because the treatment application varies over time. In the usual statistical packages that implement PSM, treated countries can be matched with controls in any year. This is highlighted as a potential problem when calendar time matters for performance. To address this issue, Cadot *et al* (2012) make use of a Weighted Least Square (WLS) estimator, following Hirani, Imbens and Ridder (2003). Instead of using the propensity score estimator as a matching variable; they suggest to use it as weights in treatment regressions. This weight is expressed as the following:

$$w_i = \begin{cases} 1, & \text{if } i \in T \cap S \\ \widehat{r_i}, & \text{if } i \in C \cap S \end{cases}$$

with $\widehat{r_i}$ the estimated odds of the propensity score $\widehat{p_i}$ with $\widehat{r_i} = \widehat{p_i}\,/(1 - \widehat{p_i}\,)$. In other words, the scheme will assign more weight to the countries that have a higher propensity score, or a

[5] The common support region is defined as the range of estimated propensity scores for which the propensity score of the treated unit is not higher than the maximum or less than the minimum propensity score of control units.

higher probability to be treated (i.e. those countries that receive DFI). This setting allows for the inclusion of year fixed effects.

Each methodology will be applied so as to observe short-term effects but also long-term effects of the DFIs' interventions first using *long* differences in the output variable and second using differentiated lags in the equations, allowing for the calculation of a long-run propensity, reflection a long-run change after permanent change. In other words, for a differentiated lag model of order 3, using two years lags, the long run propensity will be given the impact of three years DFIs investments in a row on the output variable.

Estimation results

We first discuss the results using OLS estimation. Table C1 presents the results of equation 6 using three measures of DFI investment, each time for four sets of countries: LI, LMI and UMI countries, and all low and middle income countries. There are fewer data on employment and wages for LICs than for other countries which may affect the ability to draw inferences.

The results for all low and middle income countries suggest that the investment value and the DFI over GDP ratio have a significant impact on labour productivity (more formally on labour-augmenting technical change). The dummy variable is only significant for LMI countries. None of the variables is significant when reducing the sample to UMI countries. The final three specifications in table C1 present the same results without controlling for real wages (to address any endogeneity issues of wages). Results are of the expected sign and significant at 1% for both the amount invested and the DFI investment over GDP ratio, but the coefficients are smaller than for the sample for which we can control for real wages.

The coefficient for the DFI/GDP ratio is -3.43 (column 9)[6]. This means that if the ratio increases from 0.01 to 0.02, labour productivity increases by 3.43% (labour intensity of production decreases). We can therefore calculate the effect of DFIs on labour productivity at country level. We first calculate the average DFI ratio for each country with non-zero observations and then multiply this by 3.43. Appendix D provides the results. It suggests that DFIs increased labour productivity by at least 3% in 21 LI and MI countries. In Ghana, Kenya and Zambia the effects are around 2.3%. This means that DFIs have the ability to increase jobs *and* promote productivity.

We then turn to table C2 which presents the results for the Instrumental variable regression which accounts for the possibility that the location of DFIs is not random across the level of labour productivity across countries. The first column presents the first stage probit regression, while the four following specifications follow the same sample selection as in the previous table. The selection variables in the probit regression are: GDP constant US$, population growth, net ODA received per capita in constant US$, agriculture value added (% GDP), manufacture value added (% GDP), merchandise trade (% of GDP), and manufactures imports (% of merchandise imports). This time, results are significant at 5% for the DFI dummy on the full sample. Examining the results by income group, they are significant for LMI countries[7].

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[6] The coefficient is $\gamma_{2L}(\sigma - 1)$ = -3.434. Given that σ can be calculated as the negative of – 0.364, it follows that labour augmenting technical progress changes by γ_{2L} = -3.434 / (0.364 -1) = 5.4 % for each one percentage point increase in the DFI ratio.

[7] We do not have an excluded variable in the selection equation. This is not a requirement of Heckman's procedure, but this does mean that the identification rests on the nonlinear functional form of the probit. One could have a selection variable excluded from the treatment equation, e.g. (i) the initial-period share of the DFI's country in the recipient's trade or (ii) whether the recipient country is a democracy?

We then examine the propensity score and dif in dif (table C3) estimators. We do this to control in greater detail for the possible selection bias. The propensity scores are retrieved from a cross-sectional probit regression of the probability of the country to receive support from at least one of the analysed DFIs in any year between 2004 and 2009.

Figures C1 and C2 in Appendix C present the propensity score distribution of the treatment and control group for the two different set of propensity score (PS1 and PS2). We test two different sets of variables for the propensity score matching. The first, propensity scores 1 (PS1) makes use of the same control variables as the instrumental variable regression. The second, propensity score 2 (PS2) adds variables on CPIA business regulatory environment rating (1=low to 6=high); CPIA financial sector rating (1=low to 6=high). Unfortunately, the last set of variables reduces the amount of observations considerably. However, we chose to present the results since we believe that those variables provide good control for the selection bias. Although the distribution of treatment and control group do not fully overlap, they are fairly of similar shapes for the first propensity score model. The second model shows less similarity in the distribution of treated and untreated.

Propensity score matching requires balancing in the covariate distribution between treated and untreated observations. Following Dehejia and Wahba (2002) and Imbens (2004) we run balancing tests which consist of testing for equality of means between treated and matched controls, both for the nearest neighbour matching and for the kernel matching (for PS1). The objective is to assess whether matching corrects for significant differences in the distribution of pre-treatment covariates between the treatment and the control. For many covariates there is a strong bias but matching eliminates this bias. The results of these tests show that there is no problem of unbalanced covariates in any of the models.

Table C3 presents the results for different PSM DID specifications. For each propensity score, we test the immediate effect of DFIs interventions - effect in the treatment year on the inverse of labour productivity - and long-term effect of DFIs interventions - persistence after 3 years of the treatment on the inverse of labour productivity. We use two different matching techniques: nearest neighbour matching and kernel matching. The nearest neighbour matching method calculates the ATE as the weighted average of the difference in outcomes of treated and matched control units. The kernel matching method computes the ATE as the average difference in outcome of treated and matched control case, where the matched control case is obtained as the kernel weighted average of nearest control unit outcomes. Kernel matching is particularly suited for ATE estimation with small sample sizes as each treated unit is compared to a whole set of near control units; and hence more information is used leading to improved estimates. Only observations in the common support region are used for calculating the ATE (Becker and Ichino, 2002).

The results (table C3) of PSM DID estimation are consistent with the previous analysis. The average treatment effects are negative, and except for the immediate effect using the PS1 model, they are all significant. However, the immediate effect seems less significant and smaller than the longer term effect. Over three years, results show that on average, compared to the control group, the increase in labour productivity is between 0.09 (or 9%) and 0.14 (or 14%) for countries with DFI support compared to the control group.

Finally, table C4 presents results for the WLS (using the dummy for the DFI variable). The short-term effects are consistent with the previous tables. The coefficients are of the expected sign and significant. Column (5) to (8) examines whether the outcome level remains different after 2 year. Over 2 years, results show that on average, compared to the control group, decrease in employment per US$ measured by the log difference, is 0.082 higher for countries in which DFIs intervene than for the control group.

Columns 9 and 10 present the same approach but using a differentiated lag model. Columns 11 and 12 present the respective long run propensity for which we have the results on variables DFI i(t+1)=dummy variable and DFI i(t+2)=dummy variable. Once again the results are consistent, though they are of lower magnitude for the differentiated lag model of order three, suggesting that the effect on productivity growth might disappear three years after treatment.

We have also done various further regressions on the sum of DFIs and individual DFIs such as IFC and EIB using the investment to GDP ratio (see tables C5-C7). This allows for a longer run of data, 11 years for IFC and EIB in some countries against a maximum of 6 years for all DFIs.

Summary

Tables 5 and 6 summarise the results (some detailed estimations have not been shown). Table 5 shows that the effects of DFIs (measured by the ratio of DFI investment over GDP) on labour productivity (inverse of labour intensity) is around 4% for each percentage point shift in the ratio. Table 6 suggests that the treatment effects on labour productivity range between 0–15%, with averages of around 5-7%. The effects on labour augmenting technical progress are around 50% higher (because sigma, or the elasticity of substitution, is around one third).

When we compare the treatment effects of support by a DFI using OLS and WLS estimations we can compare how the selection bias might affect the estimation results. In particular, if we do not account for such effects we would estimate a different impact of DFIs on productivity than would otherwise be the case, because DFIs might invest in countries with lower levels or growth potentials in labour productivity. The effect of DFIs (measured by the ratio of DFIs over GDP) on labour productivity is 3.4% for each percentage point shift in the ratio in the OLS equation but 7.5% in the equation that controls for selection bias (and which uses 2 year differences).

Table 5: **Effects of DFIs on labour intensity (coefficient on DFI ratio)**

	All DFIs	**EIB**	**IFC**
OLS on labour intensity at "t" (Panel – country and time dummies included)	-3.434 (0.006)***	-4.41 (3.47)	-7.64 (4.91)
WLS – short term effect (t-(t-1))	-0.000 (0.835)	-6.848 (0.037)**	-0.000 (0.443)
WLS – Persistence over 2 years (t+1-(t-1))	-7.492 (0.001)***	-9.338 (0.060)*	-4.624 (0.346)
Average of above coefficients	-3.6	-6.9	-4.1

Table 6: **Effects of DFIs on labour intensity (average treatment effect on DFI dummy**

	All DFIs	EIB	IFC
PS1 1 year difference	-0.014 (0.613) -0.010 (0.031)	-0.066 (0.027)** -0.089 (0.000)***	-0.063 (0.053)* -0.0075 (0.001)***
PS1 3 years difference	-0.092 (0.031)** -0.099 (0.049)**	-0.123 (0.095)* -0.167 (0.000)***	-0.065 (0.297) -0.117 (0.043)**
PS2 1 year difference	-0.052 (0.041)** -0.010 (0.031)**	-0.017 (0.597) -0.020 (0.274)	-0.000 (0.990) -0.005 (0.794)
PS2 3 years difference	-0.141 (0.001)*** -0.136 (0.009)***	-0.057 (0.315) -0.017 (0.676)	-0.085 (0.0007)*** -0.081 (0.040)**
Range	1.0-14.1 %	1.7 – 16.7%	0 – 8.5%
Average	6.9%	7.0%	5.2%

Note: the two entries refer to different matching techniques (see appendix C)

5 Conclusions

This study examined the effects of DFIs on job creation and labour-augmenting technological change. It assumes that job creation, productivity and structural change are significant development challenges for low income countries. Several DFIs have already taken the importance of job creation on board.

The study covered the ways in which DFIs affect employment and structural change. It covers the static effects of DFIs (via direct job creation through additionality, and the composition effects this may have for productivity) and the dynamic effects (through linkages but also through technical change). The paper reviews a set of approaches to measuring the job impact of DFIs. DFIs in the past have reported only the number of employees in DFI supported firms, but their analysis of impact has become more sophisticated over time. Several DFIs are now examining the indirect jobs generated and also the second-order growth effects and induced effects in a set of case studies. This study filled the gap in the macro analysis of DFIs on job creation *and* structural change.

This paper conducts a number of quantitative analyses. First, we used production function-based methods to estimate the impact of the investment provided by the DFIs (IFC, EBRD, EIB, CDC, DEG, Proparco). This provides expected direct and indirect employment impacts, assuming that one unit of DFIs finance lead to a unit change in domestic investment. Under our assumptions, DFIs are estimated to have created 2.6 million jobs in developing countries. This looks large, but on the other hand it is some 0.5% of the jobs required in the coming 2 decades (assuming we need employment for at least half the billions of people that will be added to the world population by then).

The second and more substantial part of the paper's estimation examines the effects of DFIs on labour productivity. In doing so, the analysis uses a panel of 62 developing countries over time (using between 6 and 11 years of observations per country). It provides panel and OLS estimations. Moreover, it provides a set of estimations that allows for potential selection and endogeneity biases. In particular, it estimates the treatment effects of support by a DFI, accounting for the likelihood of it investing in a certain country. This controls for situations in which DFIs invest in countries with lower levels or growth potentials in labour productivity –if we did not account for such effects we would estimate a lower impact of DFIs on productivity than would otherwise be the case.

We find that DFIs have a significant effect on labour productivity. The effects of DFIs (measured by the ratio of DFIs over GDP) on labour productivity is around 4% for each percentage point shift in the ratio. The average treatment effects on labour productivity range between 0–15%, with averages of around 5-7%. Overall, this study suggests that DFIs can increase employment, but can also raise labour productivity with a potential for structural transformation.

This study has provided only initial results and these can be extended in a number of ways in the future to test for the robustness in the results. Future studies could do estimations on the productivity and employment effects at sector level. The employment and productivity effects may differ by sector, and this might affect the strategies of DFIs. It is however not possible to state a priori which sectors have the greatest effects, as this is likely to be country specific. DFIs that support the financial sector may mainly add capital, but they could also improve the efficiency of fund managers and banks. DFIs might support productivity in a manufacturing firm, but this might lead to the displacement of others. Future studies also need to take into account data quality issues. For example, we should use a variety of different measures of DFI exposure, and use a variety of financial instruments they employ (loans, equity etc.). Studies should also make use of different types of employment measures. Studies should also experiment by using other estimations procedures and instruments and using methods that can help to understand which factors are conducive to greater effects. This can have important policy implications. Finally, we need to examine the interventions of DFIs in the context of other interventions to support productivity change and job creation,

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Appendix A: Data description

We use a number of different data sets. First, we have constructed and used data on DFIs using information provided by EBRD, EIB, CDC, DEG, IFC, and Proparco on their investment on the whole economy and by sector (incl. manufacturing), see Massa (2011) and Te Velde (2011). Those various institutions provided data over different periods. We have a panel of data covering 1999 to 2009 for DEG, 1992 to 2009 for EBRD, 1985 to 2009 for the EIB, 2004 to 2009 for CDC, 1990 to 2009 for the IFC and 2002 to 2009 for Proparco. For DFI exposure we use new commitments or new investments, converted into dollars and calendar year total, and based on the following sources:

- Proparco - disbursements (€, debt and equity) to foreign countries from 2002 to 2009, excel spread sheet provided by Proparco
- IFC – IFC commitments for FY 1990-2007, excel spread sheet provided by IFC, supplemented by data from annual report for 2008-2009
- EIB – finance contracts signed amount (€), 1970-2010, http://www.eib.org/projects/loans/regions/acp/index.htm
- EBRD – EBRD investments 1991-2009, spread sheet for projects signed €1000, available from www.ebrd.com
- CDC - new investments by country 2004 - 2010, £mn, spread sheet provided by CDC
- DEG - MIS Flussgrößen, €1000, 1988-2010, spread sheet provided by DEG

We have a comprehensive database covering investments from all those institutions for the period 2004 to 2009. We also undertake separate econometric analysis focusing on DFIs individually (e.g. IFC, EBRD or EIB) which provide longer runs of data.

Other variables used in the econometric analysis are retrieved from the World Bank Development Indicators, ILO and UNIDO.

Labour productivity (labour intensity of production) is computed using employment data (% employment in population (x) population) and GDP data from WDI. IMF GDP deflators are used in order to calculate volumes of variables. Real wages in constant US$ are computed using ILO real wages expressed in local currency unit. Availability of data on employment and real wages is the most binding constraint Therefore, some regressions will be presented without real wages in order to increase the sample, whilst assuming that real wage effects are taken into consideration in country fixed effects and country specific trends (this is also used in labour demand equations as e.g. in Berman and Machin). This leaves us with 62 LI, LMI and UMI countries with both employment and real wage data from 1985 to 2009, and 93 countries with at least employment data (see table A1 below).

Other data are all retrieved from WDI: Net ODA received per capita (in constant US$ using IMF deflator); Agriculture, value added (% of GDP); Manufactures imports (% of merchandise imports); Manufacturing, value added (% of GDP); Population ages 15-64 (% of total); CPIA business regulatory environment rating (1=low to 6=high); CPIA financial sector rating (1=low to 6=high). .Data in current dollars are all transformed in constant US$. We derive data from UNIDO for the manufacturing sector variables - value added, employment and wages.

We focus our analysis on LI, LMI and UMI countries. Because of its geographic orientation in Eastern Europe and Central Asia (EECA), EBRD data include very few LI countries. Also when focusing on EBRD, we restrict our panel to EECA countries.

Table A1: Countries

LI, LMI and UMI from 1989 to 2009 for which we have at least one year with data on both employment and real wage	*LI, LMI and UMI from 1989 to 2009 for which we have at least one year with data on employment*
Albania; Algeria ;Armenia; Azerbaijan ;Belarus; Bosnia and Herzegovina;Botswana; Brazil; Bulgaria; Burkina Faso ;Burundi; Chile; China; Costa Rica; Croatia; Czech Republic; Dominican Republic; Estonia; Fiji; Georgia; Ghana; Guyana; Honduras; Hungary; India; Indonesia; Jamaica; Jordan; Kazakhstan; Kenya; Latvia; Lithuania; Malawi; Malaysia; Malta; Mauritius; Mexico; Mongolia; Nepal; Oman; Pakistan; Panama; Paraguay; Peru; Philippines; Poland; Romania; Saudi Arabia; Senegal; Serbia; South Africa; Sri Lanka; Swaziland; Tajikistan; Tanzania; Thailand; Turkey; Uganda; Ukraine; Uzbekistan; Zambia; Zimbabwe	Albania; Algeria; Angola; Argentina; Armenia; Azerbaijan; Bahrain; Bangladesh; Barbados; Belarus; Bolivia; Bosnia and Herzegovina; Botswana; Brazil; Bulgaria; Burkina Faso; Burundi; Cambodia; Cameroon; Chile; China; Colombia; Costa Rica; Croatia; Czech Republic; Dominican Republic; Ecuador; Estonia; Ethiopia; Fiji; Georgia; Ghana; Greece; Guatemala; Guyana; Honduras; Hungary; India; Indonesia; Iraq; Jamaica; Jordan; Kazakhstan; Kenya; Kyrgyz Republic; Latvia; Lithuania; Madagascar; Malawi; Malaysia; Mali; Malta; Mauritius; Mexico; Moldova; Mongolia; Morocco; Mozambique; Nepal; Niger; Nigeria; Oman; Pakistan; Panama; Paraguay; Peru; Philippines; Poland; Portugal; Romania; Saudi Arabia; Senegal; Serbia; Slovak Republic; Slovenia; South Africa; Sri Lanka ; Sudan ; Swaziland ; Tajikistan ;Tanzania ; Thailand ; Trinidad and Tobago ; Tunisia ; Turke ; Turkmenistan ; Uganda ; Ukraine ; Uruguay ; Uzbekistan ; Vietnam ; Zambia; Zimbabwe
62 countries	**93 countries**

Whole economy	Data description	Source
L (employees)	Population times employment to population ratio	WDI
Y (value added, real)	GDP in volume US$ (GDP deflator base varies across countries)	Computed using WDI GDP current and IMF GDP deflator)
W/P (real wage)	Real wages (deflator base varies across countries 54 non HI countries)	Computed using ILO real wages expressed in LCU and IMF deflator.
DFI	DFI investments (EBRD, EIB, IFC, CDC, DEG, Proparco) in constant US$ by country from 2004 to 2009;	
DFI / Y (DFI investment to GDP ratio)	DFI investments (see above) over GDP constant US$ (GDP deflator base varies across countries)	EBRD, EIB, IFC, CDC, DEG, Proparco, WDI
Manufacturing	ISIC D	
L (employees)	Employees in 163 countries	UNIDO
Y (value added, real)	Value added in constant US$ (2002)	UNIDO. Constant values computed using WDI GDP deflator
W/P (real wage)	Wages in constant US$ in 163 countries (2002)	UNIDO. Constant values computed using WDI consumer price index deflator
DFI / value added	EBRD, EIB, IFC investments in industry in current US$ over GDP in current US$	EBRD, EIB, IFC

Appendix B: Direct and indirect macro-employment effects of Development Finance Institutions using a Cobb-Douglas function

Table B1a: Production function based employment effects of DFI investment in 2007 (IFC, EBRD, EIB, CDC, DEG, Proparco)

Country	Employment in 2007	GDP constant US$	DFI investments in constant US$	DFI/GDP	GFCF over GDP ratio	GDP growth (in 2007)	k=(GFCF over GDP ratio)/3*(GDP growth)
Albania	1,700,000	6,190,000,000	63,400,000	0.010248	0.294227	0.131675	0.744832
Algeria	13,000,000	80,200,000,000	9,243,800	0.000115	0.259817	0.093040	0.930842
Angola	11,000,000	14,500,000,000	7,274,244	0.000502	0.139963	0.284461	0.164010
Argentina	22,000,000	115,000,000,000	61,100,000	0.000529	0.242010	0.066496	1.213163
Armenia	1,300,000	8,440,000,000	150,000,000	0.017753	0.369355	0.383430	0.321098
Azerbaijan	5,100,000	19,500,000,000	57,900,000	0.002971	0.213995	0.301445	0.236632
Bangladesh	97,000,000	42,000,000,000	25,600,000	0.000610	0.244642	0.024823	3.285165
Belarus	4,900,000	58,000,000,000	50,000,000	0.000861	0.313763	0.085707	1.220300
Bosnia and Herzegovina	1,200,000	13,500,000,000	216,000,000	0.015939	0.296262	0.157765	0.625956
Botswana	1,200,000	4,030,000,000	2,278,726	0.000565	0.238999	-0.003531	-22.560058
Brazil	120,000,000	665,000,000,000	454,000,000	0.000682	0.174399	0.184899	0.314404
Bulgaria	4,000,000	36,100,000,000	295,000,000	0.008182	0.286849	0.161462	0.592192
Cambodia	11,000,000	6,620,000,000	39,700,000	0.005994	0.197712	0.114940	0.573379
Cameroon	12,000,000	17,900,000,000	14,600,000	0.000817	0.170801	0.141634	0.401978
Chile	8,700,000	174,000,000,000	29,200,000	0.000168	0.205123	0.068587	0.996907
China	950,000,000	1,410,000,000,000	520,000,000	0.000370	0.391063	0.196534	0.663265
Colombia	25,000,000	187,000,000,000	247,000,000	0.001322	0.220905	0.214570	0.343175
Costa Rica	2,700,000	3,950,000,000	2,082,469	0.000527	0.217939	0.068249	1.064434
Croatia	2,100,000	54,800,000,000	206,000,000	0.003758	0.262190	0.143290	0.609930
Cyprus	653,762	20,200,000,000	3,520,735	0.000174	0.220089	0.135214	0.542571
Czech Republic	5,800,000	174,000,000,000	51,000,000	0.000294	0.251806	0.177728	0.472268
Dominican Republic	5,200,000	9,530,000,000	10,800,000	0.001131	0.187897	0.087158	0.718610
Ecuador	9,100,000	22,400,000,000	12,800,000	0.000570	0.221210	0.020379	3.618356
Estonia	778,170	18,100,000,000	12,400,000	0.000682	0.345289	0.172766	0.666197
Georgia	2,400,000	6,300,000,000	74,400,000	0.011812	0.257180	0.197286	0.434530
Ghana	15,000,000	45,300,000,000	315,000,000	0.006967	0.201077	0.039050	1.716415
Guatemala	8,700,000	24,300,000,000	13,600,000	0.000560	0.195876	0.053251	1.226113
Honduras	4,300,000	7,980,000,000	9,897,591	0.001241	0.316849	0.059578	1.772735
Hungary	4,700,000	125,000,000,000	42,200,000	0.000338	0.210329	0.146914	0.477216
India	660,000,000	1,080,000,000,000	1,080,000,000	0.000996	0.329539	0.239771	0.458130
Indonesia	140,000,000	215,000,000,000	157,000,000	0.000731	0.249469	0.065581	1.267992
Israel	3,800,000	163,000,000,000	156,000,000	0.000957	0.195464	0.144256	0.451659
Jordan	2,000,000	12,200,000,000	59,700,000	0.004909	0.261466	0.081760	1.065994

Country	Employment in 2007	GDP constant US$	DFI investments in constant US$	DFI/GDP	GFCF over GDP ratio	GDP growth (in 2007)	k=(GFCF over GDP ratio)/3*(GDP growth)
Kazakhstan	10,000,000	7,190,000,000	47,600,000	0.006622	0.300175	0.138995	0.719870
Kenya	22,000,000	19,500,000,000	93,900,000	0.004811	0.194167	0.145970	0.443396
Kuwait	1,600,000	69,200,000,000	6,034,493	0.000087	0.209292	0.087639	0.796043
Kyrgyz Republic	3,200,000	765,000,000	2,835,963	0.003705	0.246211	0.167939	0.488693
Latvia	1,300,000	16,700,000,000	18,500,000	0.001112	0.336616	0.195377	0.574303
Lithuania	1,800,000	33,800,000,000	24,200,000	0.000716	0.282955	0.196825	0.479199
Madagascar	16,000,000	3,510,000,000	187,000,000	0.053193	0.276705	0.214548	0.429903
Malawi	10,000,000	3,460,000,000	17,100,000	0.004931	0.241000	0.008738	9.193561
Malaysia	16,000,000	171,000,000,000	24,300,000	0.000142	0.215549	0.137180	0.523761
Mexico	65,000,000	806,000,000,000	205,000,000	0.000254	0.213502	0.029783	2.389505
Moldova	1,600,000	716,000,000	4,047,937	0.005657	0.341042	0.114362	0.994042
Mongolia	1,500,000	3,110,000,000	48,000,000	0.015443	0.370423	0.117149	1.053993
Morocco	14,000,000	67,600,000,000	431,000,000	0.006381	0.312490	0.102783	1.013431
Pakistan	83,000,000	85,700,000,000	238,000,000	0.002772	0.209226	0.054254	1.285484
Panama	2,000,000	17,100,000,000	55,200,000	0.003231	0.220142	0.121129	0.605805
Peru	20,000,000	55,700,000,000	190,000,000	0.003403	0.216337	0.139746	0.516023
Philippines	52,000,000	109,000,000,000	156,000,000	0.001429	0.147141	0.185514	0.264384
Poland	19,000,000	403,000,000,000	209,000,000	0.000517	0.215621	0.197457	0.363996
Romania	11,000,000	135,000,000,000	462,000,000	0.003426	0.287897	0.215776	0.444747
Saudi Arabia	12,000,000	214,000,000,000	16,700,000	0.000078	0.203085	0.019354	3.497690
Senegal	7,900,000	9,420,000,000	72,400,000	0.007688	0.309000	0.146235	0.704346
Serbia	3,100,000	31,400,000,000	217,000,000	0.006906	0.239887	0.210733	0.379449
Slovak Republic	2,800,000	80,800,000,000	96,100,000	0.001189	0.261000	0.205519	0.423318
South Africa	20,000,000	249,000,000,000	404,000,000	0.001624	0.201734	0.014461	4.650231
Sri Lanka	11,000,000	20,200,000,000	6,165,413	0.000306	0.247210	0.003674	22.428168
Sudan	15,000,000	46,500,000,000	6,011,483	0.000129	0.265366	0.196934	0.449163
Tajikistan	3,800,000	39,100,000	347,263	0.008872	0.220005	0.027879	2.630475
Thailand	49,000,000	123,000,000,000	3,319,836	0.000027	0.263772	0.152897	0.575052
Tunisia	4,100,000	36,700,000,000	503,000,000	0.013710	0.231872	0.104069	0.742689
Turkey	30,000,000	77,700,000,000	90,800,000	0.001169	0.218362	0.147586	0.493186
Turkmenistan	2,600,000	10,300,000,000	1,059,780	0.000103	0.181759	0.127651	0.474627
Uganda	23,000,000	8,660,000,000	284,000,000	0.032792	0.218876	0.117289	0.622043
Ukraine	25,000,000	147,000,000,000	973,000,000	0.006634	0.270807	0.078995	1.142719
Uruguay	2,000,000	20,100,000,000	125,000,000	0.006236	0.185556	0.092754	0.666838
Uzbekistan	14,000,000	442,000,000	1,016,307	0.002298	0.209000	0.056523	1.232530
Vietnam	63,000,000	28,600,000,000	25,500,000	0.000890	0.382702	0.077094	1.654703
Zambia	8,100,000	3,610,000,000	16,900,000	0.004679	0.238257	0.044045	1.803125

Table B1b: Production function based employment effects of DFI investment in 2007 (EIB, CDC, IFC, PROPARCO, DEG and EBRD)

Country	Labour growth=3/2 (GDP growth)	Capital growth without DFI investment - counterfactual	Counterfactual GDP growth	Counterfactual labour growth	Difference in labour growth between observed and counterfactual	Change in labour according to calculated labour growth (head count)	Change in labour due to DFI (head count)	Change in labour per .000 US$ invested
Albania	0.19751235	0.381265	0.127088	0.190633	0.006880	280,390	9,766	0.154043446
Algeria	0.13956015	0.278996	0.092999	0.139498	0.000062	1,592,090	707	0.076432617
Angola	0.42669105	0.850321	0.283440	0.425160	0.001531	3,289,851	11,802	1.622427863
Argentina	0.0997434	0.199051	0.066350	0.099525	0.000218	1,995,333	4,363	0.071410290
Armenia	0.5751444	1.095000	0.365000	0.547500	0.027644	474,679	22,815	0.152102512
Azerbaijan	0.4521678	0.891782	0.297261	0.445891	0.006277	1,588,009	22,045	0.380740970
Bangladesh	0.03723435	0.074283	0.024761	0.037141	0.000093	3,482,079	8,687	0.339321209
Belarus	0.12855975	0.256414	0.085471	0.128207	0.000353	558,183	1,532	0.030648532
Bosnia / Herze	0.2366478	0.447832	0.149277	0.223916	0.012732	229,635	12,354	0.057196448
Botswana	-0.00529695	-0.010619	-0.003540	-0.005309	0.000013	-6,390	15	0.006631742
Brazil	0.2773482	0.552526	0.184175	0.276263	0.001085	26,055,373	101,951	0.224562106
Bulgaria	0.2421924	0.470569	0.156856	0.235284	0.006908	779,887	22,245	0.075405867
Cambodia	0.17240955	0.334366	0.111455	0.167183	0.005227	1,617,613	49,038	1.235225139
Cameroon	0.21245085	0.422869	0.140956	0.211435	0.001016	2,102,692	10,058	0.688897119
Chile	0.10287975	0.205591	0.068530	0.102796	0.000084	811,561	663	0.022708989
China	0.2948016	0.589046	0.196349	0.294523	0.000279	216,296,860	204,481	0.393232671
Colombia	0.3218547	0.639857	0.213286	0.319928	0.001926	6,087,180	36,431	0.147495222
Costa Rica	0.1023732	0.204251	0.068084	0.102126	0.000248	250,739	606	0.291095905
Croatia	0.2149344	0.423707	0.141236	0.211853	0.003081	371,512	5,325	0.025851187
Cyprus	0.20282055	0.405320	0.135107	0.202660	0.000160	110,238	87	0.024754170
Czech Republic	0.2665923	0.532563	0.177521	0.266281	0.000311	1,220,784	1,423	0.027909917
Dominican Republic	0.1307364	0.259899	0.086633	0.129950	0.000787	601,227	3,618	0.334968426
Ecuador	0.03056775	0.060978	0.020326	0.030489	0.000079	269,916	695	0.054307500
Estonia	0.25914945	0.517275	0.172425	0.258638	0.000512	160,158	316	0.025510998
Georgia	0.295929	0.564676	0.188225	0.282338	0.013591	548,047	25,170	0.338308170
Ghana	0.0585747	0.113090	0.037697	0.056545	0.002030	830,003	28,760	0.091300127
Guatemala	0.0798768	0.159297	0.053099	0.079648	0.000228	643,525	1,840	0.135279999
Honduras	0.0893673	0.178035	0.059345	0.089017	0.000350	352,755	1,381	0.139558951
Hungary	0.220371	0.440034	0.146678	0.220017	0.000354	848,712	1,364	0.032319566
India	0.3596565	0.717138	0.239046	0.358569	0.001087	174,583,279	527,820	0.488722351
Indonesia	0.09837165	0.196167	0.065389	0.098084	0.000288	12,538,589	36,721	0.233890244
Israel	0.2163846	0.430649	0.143550	0.215325	0.001060	675,988	3,311	0.021224676
Jordan	0.12263955	0.240674	0.080225	0.120337	0.002303	218,484	4,102	0.068713390

Country	Labour growth=3/2 (GDP growth)	Capital growth without DFI investment - Counterfactual	Counterfactual GDP growth	Counterfactual Labour growth	Difference in Labour growth between observed and counterfactual	Change in Labour according to calculated labour growth (Head count)	Change in Labour due to DFI (Head count)	Change in Labour per .000 US$ invested
Kazakhstan	0.2084925	0.407786	0.135929	0.203893	0.004600	1,725,228	38,062	0.799614046
Kenya	0.21895425	0.427059	0.142353	0.213529	0.005425	3,951,743	97,911	1.042713374
Kuwait	0.13145775	0.262806	0.087602	0.131403	0.000055	185,895	77	0.012834853
Kyrgyz Republic	0.25190775	0.496234	0.165411	0.248117	0.003791	643,901	9,690	3.416825677
Latvia	0.2930649	0.584193	0.194731	0.292096	0.000968	294,637	974	0.052630965
Lithuania	0.29523765	0.588981	0.196327	0.294491	0.000747	410,294	1,038	0.042901756
Madagascar	0.32182245	0.519913	0.173304	0.259956	0.061866	3,895,500	748,857	4.004584241
Malawi	0.013107	0.025678	0.008559	0.012839	0.000268	129,374	2,647	0.154799600
Malaysia	0.20577045	0.411270	0.137090	0.205635	0.000136	2,730,476	1,800	0.074076447
Mexico	0.04467495	0.089244	0.029748	0.044622	0.000053	2,779,689	3,306	0.016125127
Moldova	0.171543	0.337396	0.112465	0.168698	0.002845	234,280	3,886	0.959933019
Mongolia	0.17572365	0.336795	0.112265	0.168398	0.007326	224,190	9,347	0.194720431
Morocco	0.15417435	0.302053	0.100684	0.151026	0.003148	1,870,117	38,186	0.088597950
Pakistan	0.08138025	0.160604	0.053535	0.080302	0.001078	6,246,240	82,749	0.347686605
Panama	0.18169365	0.358054	0.119351	0.179027	0.002667	307,514	4,513	0.081763564
Peru	0.2096196	0.412644	0.137548	0.206322	0.003297	3,465,876	54,520	0.286948115
Philippines	0.2782713	0.551138	0.183713	0.275569	0.002703	11,320,060	109,938	0.704729821
Poland	0.2961861	0.590951	0.196984	0.295476	0.000711	4,341,611	10,416	0.049837477
Romania	0.3236637	0.639624	0.213208	0.319812	0.003852	2,689,732	32,010	0.069285542
Saudi Arabia	0.0290313	0.058040	0.019347	0.029020	0.000011	338,547	130	0.007776108
Senegal	0.2193525	0.427790	0.142597	0.213895	0.005457	1,421,152	35,358	0.488366019
Serbia	0.3160989	0.613998	0.204666	0.306999	0.009100	744,554	21,434	0.098775671
Slov. Republic	0.30827865	0.613749	0.204583	0.306874	0.001404	659,783	3,005	0.031273944
South Africa	0.02169075	0.043032	0.014344	0.021516	0.000175	424,605	3,419	0.008462869
Sri Lanka	0.00551115	0.011009	0.003670	0.005504	0.000007	60,290	75	0.012084565
Sudan	0.2954004	0.590513	0.196838	0.295257	0.000144	3,420,569	1,665	0.277034543
Tajikistan	0.0418185	0.080264	0.026755	0.040132	0.001686	152,532	6,151	17.713341353
Thailand	0.2293461	0.458645	0.152882	0.229323	0.000023	9,141,412	932	0.280814953
Tunisia	0.15610305	0.293747	0.097916	0.146873	0.009230	553,603	32,732	0.065074428
Turkey	0.22137915	0.440388	0.146796	0.220194	0.001185	5,437,603	29,110	0.320596715
Turkmenistan	0.19147575	0.382735	0.127578	0.191368	0.000108	417,832	236	0.222772059
Uganda	0.1759332	0.299149	0.099716	0.149575	0.026359	3,441,066	515,545	1.815299890
Ukraine	0.11849235	0.231179	0.077060	0.115590	0.002903	2,648,484	64,880	0.066680684
Uruguay	0.1391313	0.268911	0.089637	0.134455	0.004676	244,276	8,210	0.065676365
Uzbekistan	0.08478495	0.167706	0.055902	0.083853	0.000932	1,094,216	12,029	11.836038587
Vietnam	0.1156407	0.230743	0.076914	0.115372	0.000269	6,530,206	15,192	0.595747698
Zambia	0.0660678	0.134730	0.044910	0.067365	0.001297	573,006	11,252	0.665784646

Table B2a: Production function based employment effects of EIB investment in 2007

Country	Employment in 2007	GDP constant US$	EIB investments in constant US$	DFI/GDP	GFCF over GDP ratio	GDP growth	k=(GFCF over GDP ratio)/3*(GDP growth)
Algeria	13,000,000	80,200,000,000	2,421,250	0.000030	0.259817	0.093040	0.930842
Angola	11,000,000	14,500,000,000	5,032,870	0.000347	0.139963	0.284461	0.164010
Botswana	1,200,000	4,030,000,000	2,214,652	0.000550	0.238999	-0.003531	-22.560058
Brazil	120,000,000	665,000,000,000	166,000,000	0.000250	0.174399	0.184899	0.314404
Cameroon	12,000,000	17,900,000,000	4,754,660	0.000266	0.170801	0.141634	0.401978
China	950,000,000	1,410,000,000,000	274,000,000	0.000194	0.391063	0.196534	0.663265
Dominican Republic	5,200,000	9,530,000,000	164,123	0.000017	0.187897	0.087158	0.718610
Israel	3,800,000	163,000,000,000	156,000,000	0.000957	0.195464	0.144256	0.451659
Jordan	2,000,000	12,200,000,000	48,400,000	0.003967	0.261466	0.081760	1.065994
Kenya	22,000,000	19,500,000,000	19,400,000	0.000995	0.194167	0.145970	0.443396
Madagascar	16,000,000	3,510,000,000	172,000,000	0.049003	0.276705	0.214548	0.429903
Morocco	14,000,000	67,600,000,000	414,000,000	0.006124	0.312490	0.102783	1.013431
Panama	2,000,000	17,100,000,000	31,900,000	0.001865	0.220142	0.121129	0.605805
Peru	20,000,000	55,700,000,000	42,600,000	0.000765	0.216337	0.139746	0.516023
Philippines	52,000,000	109,000,000,000	59,800,000	0.000549	0.147141	0.185514	0.264384
Senegal	7,900,000	9,420,000,000	17,500,000	0.001858	0.309000	0.146235	0.704346
South Africa	20,000,000	249,000,000,000	130,000,000	0.000522	0.201734	0.014461	4.650231
Tunisia	4,100,000	36,700,000,000	500,000,000	0.013624	0.231872	0.104069	0.742689
Uganda	23,000,000	8,660,000,000	131,000,000	0.015127	0.218876	0.117289	0.622043
Uruguay	2,000,000	20,100,000,000	32,600,000	0.001622	0.185556	0.092754	0.666838
Zambia	8,100,000	3,610,000,000	12,500,000	0.003463	0.238257	0.044045	1.803125

Table B2b: Production function based employment effects of EIB investments in 2007

Country	Labour growth=3/2(GDP growth)	Capital growth without DFI investment - Counterfactual	Counterfactual GDP growth	Counterfactual Labour growth	difference in Labour growth between observed and counterfactual	Change in Labour according to calculated labour growth (Head count)	Change in Labour due to DFI (Head count)	Change in Labour per .000 US$ invested
Algeria	0.13956015	0.279088	0.093029	0.139544	0.000016	1,592,090	185	0.076405671
Angola	0.42669105	0.851266	0.283755	0.425633	0.001058	3,289,851	8,159	1.621044873
Botswana	-0.00529695	-0.010618	-0.003539	-0.005309	0.000012	-6,390	15	0.006634566
Brazil	0.2773482	0.553902	0.184634	0.276951	0.000397	26,055,373	37,294	0.224663056
Cameroon	0.21245085	0.424241	0.141414	0.212120	0.000330	2,102,692	3,270	0.687752435
China	0.2948016	0.589310	0.196437	0.294655	0.000146	216,296,860	107,482	0.392269348
Dominican Republic	0.1307364	0.261449	0.087150	0.130724	0.000012	601,227	55	0.335757518
Israel	0.2163846	0.430650	0.143550	0.215325	0.001059	675,988	3,310	0.021217033
Jordan	0.12263955	0.241557	0.080519	0.120779	0.001861	218,484	3,315	0.068492837
Kenya	0.21895425	0.435665	0.145222	0.217832	0.001122	3,951,743	20,248	1.043707063
Madagascar	0.32182245	0.529659	0.176553	0.264830	0.056993	3,895,500	689,870	4.010874493
Morocco	0.15417435	0.302306	0.100769	0.151153	0.003022	1,870,117	36,651	0.088529074
Panama	0.18169365	0.360308	0.120103	0.180154	0.001540	307,514	2,606	0.081689422
Peru	0.2096196	0.417757	0.139252	0.208879	0.000741	3,465,876	12,253	0.287625290
Philippines	0.2782713	0.554467	0.184822	0.277234	0.001038	11,320,060	42,208	0.705811160
Senegal	0.2193525	0.436067	0.145356	0.218034	0.001319	1,421,152	8,544	0.488237378
South Africa	0.02169075	0.043269	0.014423	0.021635	0.000056	424,605	1,099	0.008452918
Tunisia	0.15610305	0.293862	0.097954	0.146931	0.009172	553,603	32,528	0.065055546
Uganda	0.1759332	0.327548	0.109183	0.163774	0.012159	3,441,066	237,820	1.815419311
Uruguay	0.1391313	0.275830	0.091943	0.137915	0.001216	244,276	2,135	0.065495279
Zambia	0.0660678	0.134056	0.044685	0.067028	0.000960	573,006	8,328	0.666203092

Table B3a: Production function based employment effects of IFC investment in 2007

Country	Employment in 2007	GDP constant US$	IFC investments in constant US$	DFI/GDP	GFCF over GDP ratio	GDP growth	k=(GFCF /GDP)/ 3*(GDP growth)
Albania	1,700,000	6,190,000,000	24,900,000	0.004023	0.294227	0.131675	0.744832
Algeria	13,000,000	80,200,000,000	6,496,038	0.000081	0.259817	0.093040	0.930842
Argentina	22,000,000	115,000,000,000	53,100,000	0.000462	0.242010	0.066496	1.213163
Armenia	1,300,000	8,440,000,000	3,026,190	0.000359	0.369355	0.383430	0.321098
Azerbaijan	5,100,000	19,500,000,000	18,300,000	0.000938	0.213995	0.301445	0.236632
Bangladesh	97,000,000	42,000,000,000	10,400,000	0.000248	0.244642	0.024823	3.285165
Bosnia and Herzegovina	1,200,000	13,500,000,000	38,100,000	0.002822	0.296262	0.157765	0.625956
Brazil	120,000,000	665,000,000,000	248,000,000	0.000373	0.174399	0.184899	0.314404
Cambodia	11,000,000	6,620,000,000	15,300,000	0.002311	0.197712	0.114940	0.573379
Chile	8,700,000	174,000,000,000	29,200,000	0.000168	0.205123	0.068587	0.996907
China	950,000,000	1,410,000,000,000	145,000,000	0.000103	0.391063	0.196534	0.663265
Colombia	25,000,000	187,000,000,000	243,000,000	0.001299	0.220905	0.214570	0.343175
Costa Rica	2,700,000	3,950,000,000	540,544	0.000137	0.217939	0.068249	1.064434
Croatia	2,100,000	54,800,000,000	48,900,000	0.000892	0.262190	0.143290	0.609930
Cyprus	653,762	20,200,000,000	3,520,735	0.000174	0.220089	0.135214	0.542571
Dominican Republic	5,200,000	9,530,000,000	10,600,000	0.001112	0.187897	0.087158	0.718610
Ecuador	9,100,000	22,400,000,000	5,417,305	0.000242	0.221210	0.020379	3.618356
El Salvador		9,130,000,000	317,782	0.000035	0.159300	0.038398	1.382870
Georgia	2,400,000	6,300,000,000	1,547,403	0.000246	0.257180	0.197286	0.434530
Ghana	15,000,000	45,300,000,000	202,000,000	0.004459	0.201077	0.039050	1.716415
India	660,000,000	1,080,000,000,000	872,000,000	0.000807	0.329539	0.239771	0.458130
Indonesia	140,000,000	215,000,000,000	139,000,000	0.000647	0.249469	0.065581	1.267992
Jordan	2,000,000	12,200,000,000	11,400,000	0.000934	0.261466	0.081760	1.065994
Kazakhstan	10,000,000	7,190,000,000	685,739	0.000095	0.300175	0.138995	0.719870
Kenya	22,000,000	19,500,000,000	52,300,000	0.002682	0.194167	0.145970	0.443396
Kuwait	1,600,000	69,200,000,000	6,034,493	0.000087	0.209292	0.087639	0.796043
Kyrgyz Republic	3,200,000	765,000,000	362,316	0.000474	0.246211	0.167939	0.488693

Country	Employment in 2007	GDP constant US$	IFC investments in constant US$	DFI/GDP	GFCF over GDP ratio	GDP growth	k=(GFCF /GDP)/ 3*(GDP growth)
Madagascar	16,000,000	3,510,000,000	12,400,000	0.003533	0.276705	0.214548	0.429903
Malawi	10,000,000	3,460,000,000	15,000,000	0.004335	0.241000	0.008738	9.193561
Mexico	65,000,000	806,000,000,000	187,000,000	0.000232	0.213502	0.029783	2.389505
Moldova	1,600,000	716,000,000	8,128	0.000011	0.341042	0.114362	0.994042
Mongolia	1,500,000	3,110,000,000	4,699,939	0.001511	0.370423	0.117149	1.053993
Morocco	14,000,000	67,600,000,000	18,000,000	0.000266	0.312490	0.102783	1.013431
Pakistan	83,000,000	85,700,000,000	174,000,000	0.002030	0.209226	0.054254	1.285484
Panama	2,000,000	17,100,000,000	22,400,000	0.001310	0.220142	0.121129	0.605805
Peru	20,000,000	55,700,000,000	125,000,000	0.002244	0.216337	0.139746	0.516023
Philippines	52,000,000	109,000,000,000	94,800,000	0.000870	0.147141	0.185514	0.264384
Romania	11,000,000	135,000,000,000	104,000,000	0.000770	0.287897	0.215776	0.444747
Saudi Arabia	12,000,000	214,000,000,000	16,700,000	0.000078	0.203085	0.019354	3.497690
Senegal	7,900,000	9,420,000,000	24,100,000	0.002558	0.309000	0.146235	0.704346
Serbia	3,100,000	31,400,000,000	15,300,000	0.000487	0.239887	0.210733	0.379449
South Africa	20,000,000	249,000,000,000	148,000,000	0.000594	0.201734	0.014461	4.650231
Sri Lanka	11,000,000	20,200,000,000	5,864,444	0.000290	0.247210	0.003674	22.428168
Turkey	30,000,000	77,700,000,000	66,000,000	0.000849	0.218362	0.147586	0.493186
Uganda	23,000,000	8,660,000,000	116,000,000	0.013395	0.218876	0.117289	0.622043
Ukraine	25,000,000	147,000,000,000	77,100,000	0.000524	0.270807	0.078995	1.142719
Uruguay	2,000,000	20,100,000,000	85,800,000	0.004269	0.185556	0.092754	0.666838
Uzbekistan	14,000,000	442,000,000	59,477	0.000135	0.209000	0.056523	1.232530
Vietnam	63,000,000	28,600,000,000	25,400,000	0.000888	0.382702	0.077094	1.654703
Zambia	8,100,000	3,610,000,000	562,780	0.000156	0.238257	0.044045	1.803125

Table B3b: Production function based employment effects of IFC Investments in 2007

Country	Labour growth=3/2 (GDP growth)	Capital growth without DFI investment - Counterfactual	Counterfactual GDP growth	Counterfactual Labour growth	Difference in Labour growth between observed and counterfactual	Change in Labour according to calculated labour growth (head c)	Change in Labour due to DFI (Head count)	Change in Labour per .000 US$ invested
Albania	0.19751235	0.389624	0.129875	0.194812	0.002700	280,390	3,833	0.153953655
Algeria	0.13956015	0.279033	0.093011	0.139517	0.000044	1,592,090	496	0.076405671
Argentina	0.0997434	0.199106	0.066369	0.099553	0.000190	1,995,333	3,807	0.071694251
Armenia	0.5751444	1.149172	0.383057	0.574586	0.000558	474,679	461	0.152269684
Azerbaijan	0.4521678	0.900370	0.300123	0.450185	0.001983	1,588,009	6,964	0.380552665
Bangladesh	0.03723435	0.074393	0.024798	0.037197	0.000038	3,482,079	3,524	0.338889655
Bosnia and Herzegovina	0.2366478	0.468787	0.156262	0.234393	0.002254	229,635	2,188	0.057415344
Brazil	0.2773482	0.553510	0.184503	0.276755	0.000593	26,055,373	55,716	0.224663056
Cambodia	0.17240955	0.340788	0.113596	0.170394	0.002015	1,617,613	18,909	1.235900868
Chile	0.10287975	0.205591	0.068530	0.102796	0.000084	811,561	664	0.022738268
China	0.2948016	0.589448	0.196483	0.294724	0.000078	216,296,860	56,879	0.392269348
Colombia	0.3218547	0.639923	0.213308	0.319961	0.001893	6,087,180	35,808	0.147356396
Costa Rica	0.1023732	0.204618	0.068206	0.102309	0.000064	250,739	157	0.291265702
Croatia	0.2149344	0.428406	0.142802	0.214203	0.000732	371,512	1,264	0.025856856
Cyprus	0.20282055	0.405320	0.135107	0.202660	0.000161	110,238	87	0.024795969
Dominican Republic	0.1307364	0.259925	0.086642	0.129962	0.000774	601,227	3,559	0.335757518
Ecuador	0.03056775	0.061069	0.020356	0.030534	0.000033	269,916	295	0.054472279
El Salvador	0.0575976	0.115170	0.038390	0.057585	0.000013	0	0	0.000000000
Georgia	0.295929	0.591293	0.197098	0.295646	0.000283	548,047	523	0.338251568
Ghana	0.0585747	0.114551	0.038184	0.057276	0.001299	830,003	18,406	0.091121156
India	0.3596565	0.717551	0.239184	0.358775	0.000881	174,583,279	427,749	0.490537339
Indonesia	0.09837165	0.196233	0.065411	0.098117	0.000255	12,538,589	32,494	0.233772613
Jordan	0.12263955	0.244403	0.081468	0.122201	0.000438	218,484	781	0.068492837
Kazakhstan	0.2084925	0.416853	0.138951	0.208426	0.000066	1,725,228	548	0.799361206
Kenya	0.21895425	0.431860	0.143953	0.215930	0.003024	3,951,743	54,586	1.043707063
Kuwait	0.13145775	0.262806	0.087602	0.131403	0.000055	185,895	77	0.012835391
Kyrgyz Republic	0.25190775	0.502846	0.167615	0.251423	0.000485	643,901	1,239	3.418615773
Madagascar	0.32182245	0.635427	0.211809	0.317714	0.004109	3,895,500	49,735	4.010874493
Malawi	0.013107	0.025742	0.008581	0.012871	0.000236	129,374	2,327	0.155151094
Mexico	0.04467495	0.089253	0.029751	0.044626	0.000049	2,779,689	3,021	0.016153226
Moldova	0.171543	0.343075	0.114358	0.171537	0.000006	234,280	8	0.959431253
Mongolia	0.17572365	0.350013	0.116671	0.175007	0.000717	224,190	915	0.194606744
Morocco	0.15417435	0.308086	0.102695	0.154043	0.000131	1,870,117	1,594	0.088529074

Country	Labour growth=3/2 (GDP growth)	Capital growth without DFI investment - Counterfactual	Counterfactual GDP growth	Counterfactual Labour growth	Difference in Labour growth between observed and counterfactual	Change in Labour according to calculated labour growth (head c)	Change in Labour due to DFI (Head count)	Change in Labour per .000 US$ invested
Pakistan	0.08138025	0.161181	0.053727	0.080591	0.000790	6,246,240	60,614	0.348355125
Panama	0.18169365	0.361225	0.120408	0.180612	0.001081	307,514	1,830	0.081689422
Peru	0.2096196	0.414890	0.138297	0.207445	0.002174	3,465,876	35,953	0.287625290
Philippines	0.2782713	0.553253	0.184418	0.276626	0.001645	11,320,060	66,911	0.705811160
Romania	0.3236637	0.645595	0.215198	0.322798	0.000866	2,689,732	7,197	0.069205102
Saudi Arabia	0.0290313	0.058040	0.019347	0.029020	0.000011	338,547	130	0.007789822
Senegal	0.2193525	0.435073	0.145024	0.217536	0.001816	1,421,152	11,767	0.488237378
Serbia	0.3160989	0.630914	0.210305	0.315457	0.000642	744,554	1,512	0.098846157
South Africa	0.02169075	0.043254	0.014418	0.021627	0.000064	424,605	1,251	0.008452918
Sri Lanka	0.00551115	0.011009	0.003670	0.005505	0.000006	60,290	71	0.012073429
Turkey	0.22137915	0.441036	0.147012	0.220518	0.000861	5,437,603	21,152	0.320486239
Uganda	0.1759332	0.330333	0.110111	0.165166	0.010767	3,441,066	210,589	1.815419311
Ukraine	0.11849235	0.236526	0.078842	0.118263	0.000229	2,648,484	5,129	0.066530392
Uruguay	0.1391313	0.271861	0.090620	0.135931	0.003201	244,276	5,619	0.065495279
Uzbekistan	0.08478495	0.169461	0.056487	0.084730	0.000055	1,094,216	704	11.844987243
Vietnam	0.1156407	0.230745	0.076915	0.115372	0.000268	6,530,206	15,154	0.596623213
Zambia	0.0660678	0.132222	0.044074	0.066111	0.000043	573,006	375	0.666203092

Table B4a: Production function based employment effects of CDC investments in 2007

Country	Employment in 2007	GDP constant US$	CDC investments in constant US$	DFI/GDP	GFCF over GDP ratio	GDP growth	k=(GFCF over GDP ratio)/3*(GDP growth)
Algeria	13,000,000	80,200,000,000	326,512	0.000004	0.259817	0.093040	0.930842
Azerbaijan	5,100,000	19,500,000,000	857,517	0.000044	0.213995	0.301445	0.236632
Bangladesh	97,000,000	42,000,000,000	1,244,158	0.000030	0.244642	0.024823	3.285165
Botswana	1,200,000	4,030,000,000	64,074	0.000016	0.238999	-0.003531	-22.560058
Brazil	120,000,000	665,000,000,000	3,978,939	0.000006	0.174399	0.184899	0.314404
Cameroon	12,000,000	17,900,000,000	416,660	0.000023	0.170801	0.141634	0.401978
China	950,000,000	1,410,000,000,000	45,400,000	0.000032	0.391063	0.196534	0.663265
Colombia	25,000,000	187,000,000,000	4,046,423	0.000022	0.220905	0.214570	0.343175
Ecuador	9,100,000	22,400,000,000	490,934	0.000022	0.221210	0.020379	3.618356
Ghana	15,000,000	45,300,000,000	3,133,488	0.000069	0.201077	0.039050	1.716415
India	660,000,000	1,080,000,000,000	112,000,000	0.000104	0.329539	0.239771	0.458130
Indonesia	140,000,000	215,000,000,000	2,928,527	0.000014	0.249469	0.065581	1.267992
Kenya	22,000,000	19,500,000,000	12,600,000	0.000646	0.194167	0.145970	0.443396
Madagascar	16,000,000	3,510,000,000	185,018	0.000053	0.276705	0.214548	0.429903
Malaysia	16,000,000	171,000,000,000	24,300,000	0.000142	0.215549	0.137180	0.523761
Mexico	65,000,000	806,000,000,000	3,621,791	0.000004	0.213502	0.029783	2.389505
Pakistan	83,000,000	85,700,000,000	11,800,000	0.000138	0.209226	0.054254	1.285484
Panama	2,000,000	17,100,000,000	822,806	0.000048	0.220142	0.121129	0.605805
Peru	20,000,000	55,700,000,000	2,208,738	0.000040	0.216337	0.139746	0.516023
Philippines	52,000,000	109,000,000,000	1,050,481	0.000010	0.147141	0.185514	0.264384
Senegal	7,900,000	9,420,000,000	3,113,751	0.000331	0.309000	0.146235	0.704346
South Africa	20,000,000	249,000,000,000	107,000,000	0.000430	0.201734	0.014461	4.650231
Sudan	15,000,000	46,500,000,000	6,011,483	0.000129	0.265366	0.196934	0.449163
Thailand	49,000,000	123,000,000,000	3,319,836	0.000027	0.263772	0.152897	0.575052
Tunisia	4,100,000	36,700,000,000	342,510	0.000009	0.231872	0.104069	0.742689
Uganda	23,000,000	8,660,000,000	11,400,000	0.001316	0.218876	0.117289	0.622043
Ukraine	25,000,000	147,000,000,000	6,022,853	0.000041	0.270807	0.078995	1.142719
Vietnam	63,000,000	28,600,000,000	91,242	0.000003	0.382702	0.077094	1.654703
Zambia	8,100,000	3,610,000,000	363,470	0.000101	0.238257	0.044045	1.803125

Table B4b: Production function based employment effects of CDC investments in 2007

Country	Labour growth=3/2(GDP growth)	Capital growth without DFI investment - Counterfactual	Counterfactual GDP growth	Counterfactual Labour growth	difference in Labour growth between observed and counterfactual	Change in Labour according to calculated labour growth	Change in Labour due to DFI (Head count)	Change in Labour per ,000 US$ invested
Algeria	0.13956015	0.279116	0.093039	0.139558	0.000002	1,592,090	25	0.076405671
Azerbaijan	0.4521678	0.904150	0.301383	0.452075	0.000093	1,588,009	326	0.380552665
Bangladesh	0.03723435	0.074460	0.024820	0.037230	0.000005	3,482,079	422	0.338889655
Botswana	-0.00529695	-0.010595	-0.003532	-0.005297	0.000000	-6,390	0	0.006634566
Brazil	0.2773482	0.554677	0.184892	0.277339	0.000010	26,055,373	894	0.224663056
Cameroon	0.21245085	0.424844	0.141615	0.212422	0.000029	2,102,692	287	0.687752435
China	0.2948016	0.589555	0.196518	0.294777	0.000024	216,296,860	17,809	0.392269348
Colombia	0.3218547	0.643646	0.214549	0.321823	0.000032	6,087,180	596	0.147356396
Ecuador	0.03056775	0.061129	0.020376	0.030565	0.000003	269,916	27	0.054472279
Ghana	0.0585747	0.117109	0.039036	0.058555	0.000020	830,003	286	0.091121156
India	0.3596565	0.719087	0.239696	0.359543	0.000113	174,583,279	54,940	0.490537339
Indonesia	0.09837165	0.196733	0.065578	0.098366	0.000005	12,538,589	685	0.233772613
Kenya	0.21895425	0.436451	0.145484	0.218226	0.000729	3,951,743	13,151	1.043707063
Madagascar	0.32182245	0.643522	0.214507	0.321761	0.000061	3,895,500	742	4.010874493
Malaysia	0.20577045	0.411270	0.137090	0.205635	0.000136	2,730,476	1,800	0.074079191
Mexico	0.04467495	0.089348	0.029783	0.044674	0.000001	2,779,689	59	0.016153226
Pakistan	0.08138025	0.162653	0.054218	0.081327	0.000054	6,246,240	4,111	0.348355125
Panama	0.18169365	0.363308	0.121103	0.181654	0.000040	307,514	67	0.081689422
Peru	0.2096196	0.419162	0.139721	0.209581	0.000038	3,465,876	635	0.287625290
Philippines	0.2782713	0.556506	0.185502	0.278253	0.000018	11,320,060	741	0.705811160
Senegal	0.2193525	0.438236	0.146079	0.219118	0.000235	1,421,152	1,520	0.488237378
South Africa	0.02169075	0.043289	0.014430	0.021645	0.000046	424,605	904	0.008452918
Sudan	0.2954004	0.590513	0.196838	0.295256	0.000144	3,420,569	1,666	0.277204375
Thailand	0.2293461	0.458645	0.152882	0.229323	0.000023	9,141,412	935	0.281760084
Tunisia	0.15610305	0.312194	0.104065	0.156097	0.000006	553,603	22	0.065055546
Uganda	0.1759332	0.349750	0.116583	0.174875	0.001058	3,441,066	20,696	1.815419311
Ukraine	0.11849235	0.236949	0.078983	0.118474	0.000018	2,648,484	401	0.066530392
Vietnam	0.1156407	0.231279	0.077093	0.115640	0.000001	6,530,206	54	0.596623213
Zambia	0.0660678	.132191	0.044064	0.066096	0.000028	573,006	242	0.666203092

Appendix C Estimation results: DFIs combined

Table C1: OLS with country specific time trend, inverse labour productivity on different DFI intervention variables.

	XTREG														
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)
Dep var: Inverse of labour productivity	All but HI	LI	LMI	UMI	All but HI	LI	LMI	UMI	All but HI	LI	LMI	UMI	All but HI	All but HI	All but HI
DFI it=dummy variable	-0.003	-0.009	-0.125*	0.083									-0.012		
	(0.948)	(0.713)	(0.053)	(0.130)									(0.703)		
DFI it=investment value					-0.000*	-0.000*	-0.000	-0.000						-0.000***	
					(0.060)	(0.051)	(0.233)	(0.827)						(0.000)	
DFI it=DFI to GDP ratio									-3.434***	-3.435*	-8.632*	-1.502			-0.000***
									(0.006)	(0.068)	(0.057)	(0.463)			(0.000)
Log real wage	-0.361***	-0.146	-0.388*	-0.410***	-0.368***	-0.153	-0.364	-0.430***	-0.364***	-0.128	-0.370	-0.432***			
	(0.003)	(0.629)	(0.096)	(0.005)	(0.003)	(0.601)	(0.123)	(0.004)	(0.003)	(0.688)	(0.107)	(0.005)			
Constant	20.706***	-5.297***	47.203***	-1.606	20.883***	-5.244***	47.752***	0.410	22.014***	-5.367***	53.086***	1.201	14.903***	14.858***	14.858***
	(0.000)	(0.001)	(0.000)	(0.712)	(0.000)	(0.001)	(0.000)	(0.922)	(0.000)	(0.001)	(0.000)	(0.803)	(0.000)	(0.000)	(0.000)
Observations	246	33	106	106	246	33	106	106	246	33	106	106	492	492	492

Notes: ***, ** and * respectively indicates significance at the 1%, 5% and 10% levels. Robust standard errors are cluster at the country level. Regressions include a country specific time trend * fixed effects

Table C2: Instrumental variable regressions

dep var ln_e_gdp_constant	(1) Probit on dfi_dum	(2) All but HI	(3) LI	(4) LMI	(5) UMI
DFI it=dummy variable		-0.858**	0.130	-1.061**	-1.782
		(0.023)	(0.320)	(0.046)	(0.711)
Log GDP constant US$	0.044				
	(0.739)				
Log pop 15-65 (detrended)	0.478***	2.111	4.291**	1.531	2.886
	(0.000)	(0.114)	(0.030)	(0.426)	(0.790)
Net ODA received per capita in constant US$	0.002				
	(0.120)				
Log real wage		-0.489***	-0.657***	-0.493***	-0.955
		(0.000)	(0.000)	(0.000)	(0.325)
					(0.907)
Argiculture value added (% GDP)	-0.037***				
	(0.000)				
Manufacture value added (% GDP)	0.020				
	(0.171)				
Merchandise trade (% of GDP)	-0.005				
	(0.170)				
Manufactures imports (% of merchandise imports)	0.003				
	(0.749)				
Constant	0.475	-14.534	-26.702***	80.457	242.908
	(0.882)	(0.951)	(0.009)	(0.871)	(0.679)
Observations	538	230	27	102	100

Notes: ***, ** and * respectively indicates significance at the 1%, 5% and 10% levels. Robust standard errors are cluster at the country level. Regressions include a country specific time trend

Table C3: PSM DID -Average treatment effect

	Propensity score 1				Propensity score 2			
	Dep var: Effect in the treatment year on the inverse of labor productivity		Dep var: Persistence after 3 years of the treatment on the inverse of labor productivity		Dep var: Effect in the treatment year on the inverse of labor productivity		Dep var: Persistence after 3 years of the treatment on the inverse of labor productivity	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	PS1: Nearest neighbor matching	PS1: Kernel matching	PS1: Nearest neighbor matching	PS1: Kernel matching	PS2: Nearest neighbor matching	PS2: Kernel matching	PS2: Nearest neighbor matching	PS2: Kernel matching
ATT - Nearest neighbor matching	-0.010		-0.099**		-0.052		-0.141***	
	(0.613)		(0.049)		(0.041)		(0.001)	
ATT - Kernel matching		-0.014		-0.092**		-0.040		-0.136***
		(0.419)		(0.031)		(0.055)		(0.009)
Observations	5325	5325	5325	5325	5325	5325	5325	5325

Table C4: Weighted Least Square WLE - DFIs intervention (pscore 1)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
	All but HI	LI	LMI	UMI	All but HI	LI	LMI	UMI	All but HI - Diff lag model order 2	All but HI - Diff lag model order 3	All but HI - Diff lag model LRP order 2	All but HI - Diff lag model LRP order 3
	Dep Var: First difference in number of employees per USD GDP (t-(t-1))				Dep Var: 2 year difference in number of employees per USD GDP ((t+1)-(t-1))				Dep Var: 2 year difference in number of employees per USD GDP ((t+1)-(t-1))	Dep Var: 3 year difference in number of employees per USD GDP ((t+2)-(t-1))	Dep Var: 2 year difference in number of employees per USD GDP ((t+1)-(t-1))	Dep Var: 3 year difference in number of employees per USD GDP ((t+2)-(t-1))
DFI it=dummy variable	-0.082**	-0.067**	-0.149***	0.050**	-0.122**	-0.043	-0.210**	0.066	-0.139***	-0.087*		
	(0.034)	(0.033)	(0.006)	(0.020)	(0.012)	(0.288)	(0.011)	(0.142)	(0.005)	(0.071)		
DFI i(t+1)=dummy variable									-0.136***	-0.034	-0.286***	
									(0.000)	(0.245)	(0.000)	
DFI i(t+2)=dummy variable										-0.039		-0.169**
										(0.248)		(0.042)
log GDP constant 2007	-0.240***	-0.374**	-0.368***	-0.177**	0.198	0.248	0.041	0.320**	0.137	0.345**	0.138	0.343**
	(0.001)	(0.032)	(0.001)	(0.041)	(0.106)	(0.245)	(0.871)	(0.014)	(0.239)	(0.025)	(0.236)	(0.026)
ODA constant 2007	-0.001	-0.001	-0.001	-0.000	-0.001	-0.001	-0.001	-0.001	-0.002**	-0.002*	-0.002**	-0.002*
	(0.227)	(0.411)	(0.376)	(0.424)	(0.142)	(0.650)	(0.414)	(0.125)	(0.029)	(0.062)	(0.032)	(0.063)
Agriculture value added (% of GDP)	-0.000	-0.002	-0.003	-0.014	-0.021**	-0.006	-0.029*	-0.006	-0.018***	0.000	-0.017***	0.001
	(0.894)	(0.726)	(0.226)	(0.207)	(0.010)	(0.516)	(0.077)	(0.784)	(0.006)	(0.992)	(0.009)	(0.878)
Manufacturing value added (% of GDP)	0.001	-0.021*	0.003	-0.024**	0.022	-0.010	0.021	-0.032*	0.016	0.001	0.016	0.002
	(0.523)	(0.059)	(0.266)	(0.015)	(0.134)	(0.510)	(0.160)	(0.064)	(0.159)	(0.713)	(0.154)	(0.608)
Merchandise trade (% of GDP)	0.001	0.001	0.001	0.003***	0.001	-0.001	0.001	0.005**	0.001	-0.000	0.001	-0.000
	(0.237)	(0.594)	(0.324)	(0.004)	(0.440)	(0.791)	(0.642)	(0.011)	(0.355)	(0.969)	(0.430)	(0.858)
Manufactures imports (% of merchandise imports)	-0.001	-0.003**	-0.000	0.000	-0.002	-0.004	0.003	-0.002	-0.002	0.000	-0.002	0.001

	(0.295)	(0.028)	(0.859)	(0.929)	(0.325)	(0.215)	(0.627)	(0.477)	(0.180)	(0.878)	(0.186)	(0.790)
LI_dum	-0.048										-0.146**	-0.163***
	(0.295)										(0.018)	(0.006)
LMI_dum	-0.004										-0.026	-0.076*
	(0.900)										(0.534)	(0.068)
f1											-0.147***	-0.089*
											(0.004)	(0.068)
f2												-0.126*
												(0.052)
Constant	6.816***	10.888**	7.789***	5.068**	-6.148*	-4.400	-1.587	-8.225**	-3.230	-7.277**	-4.094	-9.834**
	(0.001)	(0.025)	(0.001)	(0.034)	(0.090)	(0.328)	(0.781)	(0.022)	(0.240)	(0.030)	(0.224)	(0.021)
Observations	419	114	168	137	356	100	145	111	354	291	354	291

Notes: ***, ** and * respectively indicates significance at the 1%, 5% and 10% levels. Robust standards error in brackets. Regressions implemented using WLS0 in stata; Country and Year fixed effects

Table C5: Weighted Least Square WLE - DFI over GDP ratio (pscore 1)

	(1)	(2)
	All but HI	All but HI
	Dep Var: First difference in number of employees per USD GDP (t-(t-1))	Dep Var: 2 year difference in number of employees per USD GDP ((t+1)-(t-1))
DFI it=DFI/GDP	-0.000	-7.492***
	(0.835)	(0.001)
log GDP constant 2007	-0.267***	0.098
	(0.001)	(0.453)
ODA constant 2007	-0.001	-0.001
	(0.262)	(0.312)
Agriculture value added (% of GDP)	0.000	-0.019**
	(0.847)	(0.020)
Manufacturing value added (% of GDP)	0.001	0.023
	(0.695)	(0.139)
Merchandise trade (% of GDP)	0.001	0.001
	(0.338)	(0.752)
Manufactures imports (% of merchandise imports)	-0.002	-0.002
	(0.112)	(0.326)
LI_dum	-0.043	-0.134**
	(0.358)	(0.039)
LMI_dum	-0.013	-0.047
	(0.636)	(0.257)
Constant	7.499***	-2.612
	(0.001)	(0.404)
Observations	422	359

Notes: ***, ** and * respectively indicates significance at the 1%, 5% and 10% levels. Robust standard errors are cluster at the country level. Regressions include a country specific time trend

Table C6: Weighted Least Square WLE - EIB over GDP ratio (pscore 1)

	(1)	(2)
	All but HI	All but HI
	Dep Var: First difference in number of employees per USD GDP (t-(t-1))	Dep Var: 2 year difference in number of employees per USD GDP ((t+1)-(t-1))
DFI it=DFI/GDP	-6.848**	-9.338*
	(0.037)	(0.060)
log GDP constant 2007	0.157***	0.479***
	(0.000)	(0.000)
ODA constant 2007	-0.000**	-0.000**
	(0.036)	(0.016)
Agriculture value added (% of GDP)	0.035**	
	(0.665)	(0.128)
Manufacturing value added (% of GDP)	0.017*	
	(0.652)	(0.005)
Merchandise trade (% of GDP)	0.003***	0.002
	(0.000)	(0.234)
Manufactures imports (% of merchandise imports)	-0.011***	-0.009***
	(0.000)	(0.001)
LI_dum	0.157	0.142
	(0.119)	(0.210)
LMI_dum	0.137	0.130
	(0.126)	(0.247)
Constant	-3.054***	-11.860***
	(0.004)	(0.000)
Observations	1201	1138

Notes: ***, ** and * respectively indicates significance at the 1%, 5% and 10% levels. Robust standard errors are cluster at the country level. Regressions include a country specific time trend

Table C7: Weighted Least Square WLE - IFC over GDP ratio (pscore 1)

	(1)	(2)
	All but HI	All but HI
	Dep Var: First difference in number of employees per USD GDP (t-(t-1))	Dep Var: 2 year difference in number of employees per USD GDP ((t+1)-(t-1))
DFI it=DFI/GDP	-0.000	-4.624
	(0.443)	(0.346)
log GDP constant 2007	0.144***	0.418***
	(0.000)	(0.000)
ODA constant 2007	-0.000**	-0.000***
	(0.014)	(0.000)
Agriculture value added (% of GDP)	0.000	0.005
	(0.888)	(0.292)
Manufacturing value added (% of GDP)	0.000	0.027***
	(0.967)	(0.000)
Merchandise trade (% of GDP)	0.002**	0.000
	(0.013)	(0.814)
Manufactures imports (% of merchandise imports)	-0.009***	-0.009***
	(0.000)	(0.000)
LI_dum	0.111*	0.038
	(0.069)	(0.621)
LMI_dum	0.070	0.020
	(0.196)	(0.786)
Constant	-1.995***	-7.429***
	(0.000)	(0.000)
Observations	1201	1138

Notes: ***, ** and * respectively indicates significance at the 1%, 5% and 10% levels. Robust standard errors are cluster at the country level. Regressions include a country specific time trend

Figure C1: PS1 Densities and histogram of propensity scores by treatment and control group.

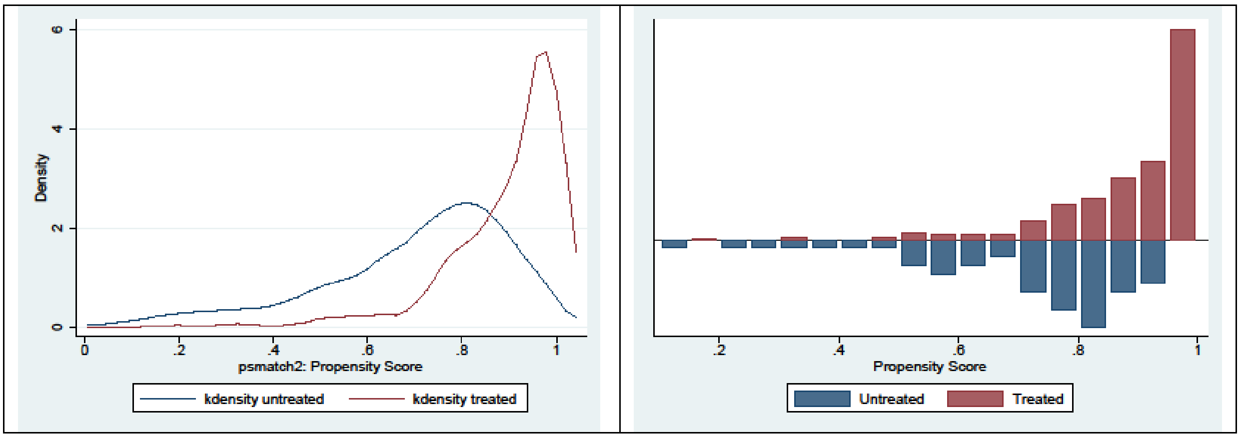

Figure C2: PS2 Densities and histogram of propensity scores by treatment and control group.

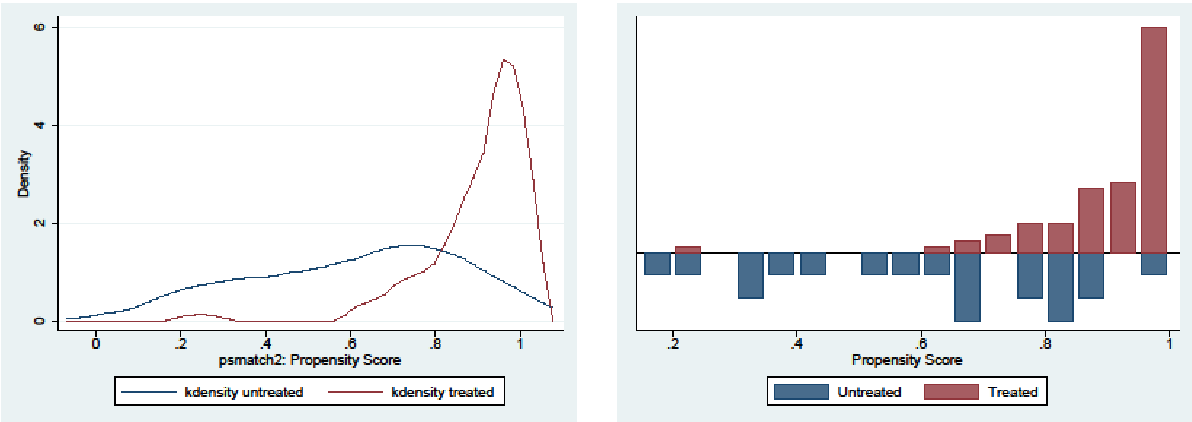

Table C8: Balancing properties of covariates in treated and control groups for nearest neighbour matching on propensity scores

Covariates	Sample	Mean treated units	Mean control units	% Bias between treated and controls	% Reduction in bias	t-Test Mean(treated) = Mean(Control)	
						t	Prob>t
PS1							
log GDP constant	Unmatched	23.965	22.113	129.7		7.78	0
	Matched	23.105	23.084	1.5	98.9	0.1	0.92
Detrended population	Unmatched	1.0492	-0.38391	102.7		6.75	0
	Matched	1.0582	0.92681	9.4	90.8	0.72	0.47
Net ODA received per capita (in constant US$	Unmatched	25.019	46.525	-55.3		-4.17	0
	Matched	43.013	54.32	-29.1	47.4	-2.23	0.03
Agriculture, value added (% of GDP)	Unmatched	14.241	20.847	-54.3		-4.15	0
	Matched	22.745	28.062	-43.7	19.5	-3.74	0
Manufactures imports (% of merchandise imports)	Unmatched	16.576	13.355	37.5		2.72	0.01
	Matched	13.583	10.093	40.6	-8.3	3.02	0
Merchandise trade (% of GDP)	Unmatched	69.734	75.671	-18.4		-1.31	0.19
	Matched	64.86	59.825	15.6	15.2	1.27	0.21
Manufacturing, value added (% GDP)	Unmatched	67.132	63.761	32.2		2.29	0.02
	Matched	63.596	68.586	-47.6	-48	-3.1	0

Table C9: Balancing properties of covariates in treated and control groups for kernel matching on propensity scores

Covariates	Sample	Mean treated units	Mean control units	% Bias between treated and controls	% Reduction in bias	t-Test Mean(treated) = Mean(Control) t	Prob>t
PS1							
log GDP constant	Unmatched	23.965	22.113	129.7		7.78	0
	Matched	23.105	22.962	10	92.3	0.83	0.407
Detrended population	Unmatched	1.0492	-0.38391	102.7		6.75	0
	Matched	1.0582	0.8621	14.1	86.3	1.32	0.189
Net ODA received per capita (in constant US$	Unmatched	25.019	46.525	-55.3		-4.17	0
	Matched	43.013	47.859	-12.5	77.5	-1.15	0.25
Agriculture, value added (% of GDP)	Unmatched	14.241	20.847	-54.3		-4.15	0
	Matched	22.745	26.119	-27.8	48.9	-2.58	0.01
Manufactures imports (% of merchandise imports)	Unmatched	16.576	13.355	37.5		2.72	0.007
	Matched	13.583	11.111	28.8	23.3	2.59	0.01
Merchandise trade (% of GDP)	Unmatched	69.734	75.671	-18.4		-1.31	0.19
	Matched	64.86	60.802	12.6	31.7	1.16	0.246
Manufacturing, value added (% GDP)	Unmatched	67.132	63.761	32.2		2.29	0.022
	Matched	63.596	69.627	-57.5	-78.9	-4.01	0

Appendix D Impact of DFIs on labour productivity (average in % over 2004-2009)

1	Maldives	8.14%	41	Senegal	1.22%	81	Costa Rica	0.42%
2	Georgia	6.44%	42	Nigeria	1.14%	82	Colombia	0.42%
3	Bosnia and Herzegovina	5.63%	43	Malawi	1.14%	83	Niger	0.38%
4	Mauritania	4.68%	44	Sierra Leone	1.13%	84	Chad	0.37%
5	Tunisia	4.21%	45	Mauritius	1.12%	85	Lithuania	0.35%
6	Madagascar	4.16%	46	St. Vincent and the Grenadines	1.09%	86	Papua New Guinea	0.35%
7	Albania	4.09%	47	Afghanistan	1.09%	87	Belarus	0.34%
8	Moldova	4.08%	48	Tanzania	1.07%	88	Turkey	0.32%
9	Panama	3.86%	49	Liberia	1.07%	89	Ecuador	0.31%
10	Serbia	3.77%	50	Togo	1.06%	90	Bangladesh	0.27%
11	Cape Verde	3.70%	51	Cameroon	0.99%	91	India	0.27%
12	Azerbaijan	3.69%	52	Rwanda	0.93%	92	Indonesia	0.24%
13	St. Lucia	3.38%	53	Bolivia	0.90%	93	Botswana	0.24%
14	Bulgaria	3.35%	54	Bhutan	0.86%	94	Belize	0.22%
15	Lebanon	3.34%	55	Sri Lanka	0.84%	95	Mali	0.22%
16	Armenia	3.31%	56	Paraguay	0.82%	96	Brazil	0.20%
17	Tuvalu	3.12%	57	Kiribati	0.80%	97	Angola	0.17%
18	Kyrgyz Republic	3.08%	58	Jamaica	0.79%	98	Chile	0.16%
19	Mongolia	3.03%	59	Burkina Faso	0.75%	99	Iraq	0.15%
20	Ukraine	3.02%	60	Solomon Islands	0.73%	100	Mexico	0.12%
21	Uganda	3.00%	61	Lesotho	0.72%	101	Algeria	0.12%
22	Mozambique	2.98%	62	Dominican Republic	0.67%	102	China	0.10%
23	Nicaragua	2.70%	63	El Salvador	0.66%	103	Burundi	0.09%
24	Montenegro	2.69%	64	Benin	0.66%	104	Thailand	0.07%
25	Jordan	2.56%	65	Uruguay	0.64%	105	Nepal	0.07%
26	Ghana	2.41%	66	Ethiopia	0.63%	106	Turkmenistan	0.07%
27	Zambia	2.27%	67	Vietnam	0.62%	107	Malaysia	0.04%
28	Kenya	2.20%	68	Peru	0.61%	108	Sudan	0.02%
29	Tajikistan	2.17%	69	Eritrea	0.61%	109	Kosovo	0.01%
30	Morocco	2.16%	70	Pakistan	0.59%			
31	Samoa	2.08%	71	Seychelles	0.57%			
32	Romania	1.84%	72	Guatemala	0.56%			
33	Kazakhstan	1.76%	73	South Africa	0.54%			
34	Djibouti	1.69%	74	Philippines	0.53%			
35	Vanuatu	1.45%	75	Guinea	0.52%			
36	Honduras	1.43%	76	Grenada	0.51%			
37	Namibia	1.41%	77	Gabon	0.49%			
38	Fiji	1.32%	78	Uzbekistan	0.47%			
39	Cambodia	1.32%	79	Haiti	0.43%			
40	Tonga	1.30%	80	Argentina	0.43%			

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