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Authors(s)	Görg, Holger, Strobl, Eric, Walsh, Frank
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WHY DO FOREIGN-OWNED FIRMS PAY MORE?

THE ROLE OF ON-THE-JOB TRAINING*

Holger Görg
University of Nottingham

Eric Strobl
Ecole Polytechnique Paris

Frank Walsh
University College Dublin

Abstract

While foreign-owned firms have consistently been found to pay higher wages than domestic firms to what appear to be equally productive workers, the causes of this remain unresolved. In a two-period bargaining framework we show that if training is more productive and specific in foreign firms, foreign firm workers will have a steeper wage profile and thus acquire a premium over time. Using a rich employer-employee matched data set we verify that the foreign wage premium is only acquired by workers over time spent in the firm and only by those that receive on the job training, thus providing empirical support for a firm specific human capital acquisition explanation.

Keywords: on-the-job training, foreign firms, wages
JEL Classification: F23, J24

Section I: Introduction

It appears to be widely accepted wisdom that foreign firms pay higher wages than their domestic counterparts in the host country and a sizeable body of literature now provides evidence to substantiate this fact. Nevertheless, the causes of this differential are as of yet unresolved. For example, while the studies by Lim (1977) for Malaysian manufacturing, Aitken, Harrison and Lipsey (1997) for Mexico and Venezuela, Lipsey and Sjöholm (2004) for Indonesia, and Te Velde and Morrisey (2003) for five African countries all find that part of the wage differential can be explained by worker and firm characteristics, a sizeable proportion remains unaccounted for. Similarly, the existence of an unexplained wage differential between foreign and domestic firms seems prevalent for developed countries; see Aitken, Harrison and Lipsey (1997) and Feliciano and Lipsey (2006) for the US, Globerman, Ries and Vertinsky (1994) for Canada, and Griffith and Simpson (2004) for the UK.

There are several theoretical models that may explain why the wage premium in foreign firms is acquired by workers over time through on the job training. It may be that training is more productive in foreign firms because foreign firms have access to firm specific assets that give them a technological advantage over domestic firms in the same industry (see, Caves, 1996), or foreign-owned firms having better access to capital which allows them to invest in better technology. If foreign firms choose a more training intensive outcome for one of the above reasons this may also lead to more able workers being chosen in the foreign sector which would also affect the wage profile. Yet another possibility is that monitoring is more difficult in foreign firms causing firms to pay efficiency wages. Such wage premia may induce the firms to engage in more specific training as in Acemoglu and Pischke (1999a).

We investigate these possibilities empirically by using a rich employer-employee matched dataset for manufacturing firms in Ghana, which allows us to control for a large

variety of firm and worker level characteristics that could arguably be driving any wage differentials across nationality of ownership type. Distinguishing between those workers that have received on-the-job training from those that have not, our econometric estimations of wage regressions suggest that returns to on the job training explain the foreign firm wage premium. Specifically, we find that while there are no differences in starting wages between workers in domestic or foreign firms, workers receiving on the job training in foreign firms experience higher wage growth than those working and receiving on the job training in domestic firms.

The remainder of the paper is structured as follows. Section II sets out the theoretical model. Section III discusses the data while Section IV presents the results of the econometric estimations. Finally, Section V concludes.

Section II: Theoretical Framework

Traditionally the impact of firm specific training on wages is analysed using Hashimoto's (1981) model where competition ensures that the contract maximizes expected joint surplus in an uncertain world. More recently, some authors have used two period bargaining models to solve for the pre and post training wage.[1] Accordingly, human capital acquisition is chosen in period one by the firm, firms make the choice of human capital acquisition anticipating a second period wage bargain which will condition on this, and the first period wage is determined by a participation condition.[2] Here, we follow in the spirit of the latter groups of models.

One might expect that if the difference in the level of firm provided training between foreign and domestic firms is the source for the foreign firm wage premium that

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[1] See Malcolmson (1999) for a discussion of these models or Acemoglu and Pischke (1999) and Booth and Chatterji (1998) for recent applications.
[2] Another implication of the bargaining model that has been used to analyse firm specific capital accumulation is that because the surplus bargained over in the second period is not net of the costs of training, under-investment may occur (see Malcolmson, 1999 for a discussion of the holdup problem).

the firms with training would have higher wage growth but lower starting wages. This is in fact not so. If foreign firms train more because training is more productive for foreign firms we would expect starting wages to be lower in the foreign sector other things equal however if training is more specific in the foreign sector this will impact on the share of training workers are willing to pay for and prevent starting wages falling. If the efficiency wage model referred to earlier is relevant the efficiency wage acts as a wage floor and prevents the starting wage from falling [see Acemoglu and Pischke (1999a)]. We will see from our empirical results that while foreign firms have higher wage growth than domestic firms there is no statistically significant difference in starting wages. This is consistent with much of the empirical evidence in other studies which indicate that increased on the job training does not lower starting wages (see Barron Berger and Black (1999) for a discussion).

As noted above there are a variety of models that may predict the different wage profiles for workers in foreign and domestic firms by making assumptions on differences in technologies, risk aversion, monitoring costs or worker ability across sectors. In the model below we assume foreign firms invest in training that is more productive and specific than domestic firms. In reality there may of course be other combination of differences in technologies, separation rates or monitoring technologies which as outlined earlier are also consistent with the observed wage profile[3].

The model

There are two periods but the discount rate is set to zero for simplicity. Identical risk neutral workers have the utility function u = w in each period where w is the wage. Firms have a per-worker production function f(t), which is concave in training t. Output of each worker is assumed to be independent for simplicity. We assume training is partly specific so that workers have an outside wage which yields utility of v(t) in each period

and $v(t) < f(t)$ for all values of t . The cost of providing training is given by the convex function c(t). There is free movement of workers across all firms. The exogenous turnover rate of firms is q and if the firm exits it gets a profit level of $p = 0$. The wage in the first and second of the two periods are w_0 and w_1 respectively. A firm's expected profit function is thus:

$$p = (1-q)[f(t) - w_1] - c(t) - w_0 \qquad (1)$$

If there is a separation the firm will get the alternative profit of zero in the second period. Profit is second period output less wage times the probability of no separation less the costs incurred in the first period. Workers have a given reservation utility level $\underline{u}$. To ensure worker participation a contract must satisfy:

$$\underline{u} \le qv(t) + (1-q)w_1(t) + w_0(t) \qquad (2)$$

Given that it is costless for workers to move across jobs (2) will hold with equality in all firms. This allows us to solve for the starting wage as:

$$w_0 = \underline{u} - qv - (1-q)w_1 \qquad (3)$$

The bargaining solution to the second period wage is[4]:

$$w_1 = \boldsymbol{b}f(t) \qquad (4)$$

Thus a clear prediction is that firms that train more would have higher second period wages. The first order condition for training after substituting (3) and (4) into (1) is:

$$p'(t) = (1-q)f'(t) + v'(t) - c'(t) = 0 \qquad (5)$$

Our objective here is to illustrate in the simplest possible theoretical framework that while plausible differences in exogenous technological parameters are consistent with steeper wage profiles for workers in foreign firm's as we expect, starting wages for workers in foreign firm's need not be lower. The argument is that if a highly structured

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[3] Given that we have extensive controls for worker ability in our regressions, we argue in the empirical section of the paper that this can not be the explanation for the differing wage profiles.

simplified model such as that outlined below makes no clear prediction on starting wages across firms then the same is true in a more general model. At this stage we assume that

$c = \dfrac{t^2}{2}$, f(t)=At and v(t)=Bt. The efficient level of training in this case is: t=(1-q)A+qB.

We will denote foreign firm values with * and assume that $\underline{u} = 1$, c(t)=c*(t), A=100, A*=150, B=50, B*=0 and $b = b* = 0.8$. Substituting these values into (3) and (4) Figure 1 plots the first and second period wages at different separation rates.

Figure 1 here

Figure 1 shows a range of separation rates where foreign firms always have higher training and second period wages but starting wages move from being lower in the foreign firm to being higher at different separation rates. Firms with more training are expected to have higher second period wages while the starting wage may be higher or lower.

Section III: Data and Summary Statistics

In order to investigate whether the predictions of our theoretical model are consistent with what is observed empirically we utilise data for manufacturing firms in Ghana from the *Regional Programme for Enterprise Development* (RPED).[5] The data we use here are for the 1998 sample, i.e., the fifth annual wave, of Ghanaian manufacturing firms.[6] The initial wave of 200 firms in this survey was drawn from the 1987 Ghana Census of Manufacturing Activities, stratified by size, sector and location.[7] The sectors from which the firms were chosen are Food, Textiles and Garments, Wood, and Metal,

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[4] We assume that the fallback options workers and firms would get during bargaining are zero. See Sutton (1986) or Malcolmson (1999) for a discussion on the outside option in bargaining models.
[5] It is noteworthy that the Ghana data is also used by te Velde and Morrissey (2003) in their five country study, although an earlier wave with much less information than used here.
[6] We use only the 1998 since this last wave provides the most information at the worker level. Unfortunately one cannot link workers across waves.

which together comprise about 70 per cent of total manufacturing employment in Ghana.[8] When firms were closed down over the period they were replaced with firms in the same size, sector and location category.

The RPED data set is essentially an employer-employee matched data set in that, while each firm was interviewed for information at the firm level, additionally up to ten of its workers, representative of ten broad occupation categories, were interviewed. Firm level information used in this paper are the level of profit, total employment, value of capital stock, regional location, sector, incidence of state ownership, and, most importantly, the percentage of foreign ownership of each firm. Information from the worker surveys utilized include information concerning their current and previous year earnings and employment, starting earnings and employment, and their level of human capital.[9] In order to ensure that our sample size was consistent across estimation models we only used data for which we had all information at the worker and firm level that we used throughout the analysis. This left us with a sample of 144 firms and 1,365 workers.

Our variable of primary interest is the ownership of the firm. Most previous studies of the foreign wage premium simply distinguish between firms with no foreign ownership and those with at least some, but for the latter group do not distinguish between the degree of foreign ownership. In this paper we are careful to distinguish between the degree of foreign ownership within foreign owned firms, as greater foreign ownership may also mean greater access to foreign capital and technology and better know-how. Also, greater foreign ownership may allow greater adoption of these advantages by the firm. An examination of the foreign owned firms in our sample shows that the incidence of foreign ownership is quite dispersed; of the 144 firms in the sample

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[7] In the sampling large firms were oversampled. However, since there is no reliable source on the actual population of firms, we were not able to use weights for either our summary statistics our econometric estimation.
[8] To be precise, the data set allows us to distinguish among ten sectors within these four main sectors.
[9] All nominal variables were converted into 1998 prices using sectoral deflators.

34 have some foreign ownership. Of those with at least some foreign ownership the mean, minimum, maximum and standard deviation of the degree of foreign ownership are 65, 20, 100 and 22 per cent, respectively. Thus allowing foreign ownership to vary among firms in a non-dichotomous manner allows us a more precise measure of the factors associated with foreign owned firms if these depend on the degree of foreign ownership.

In Table 1 we present some summary statistics for workers in foreign and domestically owned firms. As can be seen the average wage rate in domestic firms is considerably lower than that for employees in foreign owned firms.[10] This discrepancy already manifests itself in the starting wage of workers, and widens as workers spend more time in the firm. Part of the widening wedge is of course due to the fact that workers in foreign owned firms stay on average longer in the same firm as is apparent from the tenure means. However, even when we calculate the average per year (spent in the firm) increase in the log real wage rate from these means, we find that the wage growth per year is still larger for workers employed by foreign owned firms. The worker means, however, also show that workers in domestic firms are less educated - a factor which may, at least in part, be driving the difference in mean wages.

[Table 1 here]

Examining some of the average characteristics of foreign relative to domestic owned firms, also given in Table 1, we find the two groups of firms differ in terms of these. Specifically, foreign owned firms are found to be substantially larger, enjoy greater profits, and have higher capital intensity than their domestic counterparts. In Table 2 we have calculated the sectoral distribution of firms by ownership in order to see whether foreign and indigenous firms operate in similar sectors. As can be seen, the Food Products, Metal Products, and Wood Products industries contain together over 60 per

cent of total foreign firm population, the most dominant being the Food Products sector. In contrast, while Metal Products and Food Products are important industries for domestic firms, the most dominant sector are Furniture and Metal Products. Also, while no foreign plants are in the Bakery Goods industry, over 12 per cent of our domestic sample are categorized as mainly producing such products.

[Table 2 here]

Given the large differences in the means of employment, capital intensity, and profit per employee across type of ownership shown in Table 1, we also calculated the ownership differences of these aspects across sectors in Table 3. Accordingly, differences in the sectoral distribution are able to explain some of the results found in Table 1. For instance, for profit per employee, the difference in Food Products and Wood Products by ownership is exasperated by the larger foreign presence in these industries. Similarities in profits per employee, such as in Furniture and Metal Products, would have been of course aggregated away. Table 3 also shows that capital intensity is always larger for foreign firms except for in Machinery, although in many cases the discrepancy is not as large as in aggregate. In terms of the size of the workforce, foreign firms are always considerably larger except for in Chemical Products.

[Table 3 here]

Overall, one may conclude from these summary statistics there are clear differences between domestic and foreign firms. Clearly, some of these firm level features may be driving at least some of the wage premium. For instance, Strobl and Thornton (2004) have shown for an earlier wave of the data, that there was a large firm size wage premium – a factor that is commonly known as the employer size wage effect in the labour economics literature. Also some researchers have argued that the foreign wage premium may be associated with greater profit sharing (see Budd et al., 2003 and te

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[10] One should note that wages are measured as the complete compensation of the individual. In other

Velde and Morrissey, 2003). Moreover, it is reasonable to suspect that if foreign firms have greater or better quality capital they may need to hire more skilled workers, or, as we argue, train workers more intensely. The firm means provided at least tentatively suggest that these factors may also be linked to the foreign wage premium, since a simple correlation of these firm level variables, in aggregate and across sectors, suggest that they are all positively correlated with the degree of foreign ownership.

The differences across type of ownership may also be determining the decision to train in and of itself. For example, greater capital intensity in foreign firms may require greater firm-specific skills, which induce the firm to seek more skilled and promising workers. Similarly, the on average larger workforce of foreign firms may reflect a greater variety of more specialized skills, which in turn would increase the necessity to train. Another possibility is that the type of sectors that foreign firms are more predominant in is a causal factor in the necessity to train. However, if one assumes that the more technology intensive sectors, i.e., Chemical Products, Machinery, and Metal Products, are the more likely to require firm-specific capital, then the relatively similar sectoral distribution with regard to these would suggest that sectoral differences are unlikely to be inducing foreign firms on average to train more.

Section IV: Econometric Evidence

Current Wages

The summary statistics confirm the general finding in the literature of a foreign wage premium for Ghanaian manufacturing. However, they also suggest that other human capital and firm characteristics that are usually associated with higher wages may be correlated with the degree of foreign ownership. We now turn to measuring the foreign wage premium controlling for other individual and firm specific factors.

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words, earnings not only include explicit pay, but also the value of other allowances, bonuses and benefits.

We first ran a simple OLS regression of determinants of the log of current hourly earnings only including foreign ownership as an explanatory variable as a our benchmark case, the results of which are given in the first column of Table 4. As can be seen, the ownership variable has a significant positive impact on the log hourly wage rate. At the mean of the hourly wage rate in levels, the coefficient implies that a one per cent increase of foreign ownership increases the log hourly wage rate by 0.65 per cent.

Using this initial specification as the benchmark case, we subsequently systematically added sets of explanatory variables to investigate how these may alter the foreign ownership wage premium. Firstly, the human capital model (see, e.g., Becker, 1993) posits that differences in wages could be explained by differences in human capital. We thus included all available worker characteristics that may be related to the level of human capital in the regression, namely, education dummies (9), actual work experience at the start of the job and its value squared, Ghanaian language reading ability dummy, Ghanaian language writing ability dummy, English language speaking ability dummy, English language reading ability dummy, simple calculation ability dummy, gender dummy, marital status dummy, and African ethnicity dummy. The results of this exercise are given in the second column of Table 4. Accordingly, the size of the coefficient is reduced substantially from 0.65 to 0.46, although it is still highly significant. However, clearly the size of foreign wage premium remains large, implying a 2.3 per cent increase in the hourly wage rate for each additional percentage increase in foreign ownership.

We subsequently included characteristics pertaining to the job that the individual has performed, namely, tenure and its value squared, occupation dummies (19), and a set of dummies indicating whether the worker currently receives on-the-job-training or received on-the-job-training in the past, is a permanent employee, works part-time, and is a union member. As can be seen from the third column of Table 4, this set of dummies

also reduces the coefficient on foreign ownership noticeably, although, again a significant and large wage premium remains.

Finally, we also included regional dummies (3), sectoral dummies (9), a state ownership dummy, profits per employee, capital intensity, and size (employment) to control for other differences across firms that may be driving the firm size wage premium. These may all arguably affect the wage rate and be possibly unevenly distributed across firm ownership type. In particular, the extensive literature on wage determination has shown that inter-industry wage differentials, the firm size wage effect, public ownership and regional labour markets can be important factors of wage determination (see, e.g., Strobl and Thornton, 2004). Our inclusion of profits per employee also allows us to see whether rent sharing is an important feature of wage determination as is assumed in our theoretical model (see also Budd et al., 2003). From the results in the fourth column of Table 4 it is reassuring to note that greater profits per employee increases the wage rate of workers significantly, indicating that indeed, as in our model, bargaining is an important feature of earnings. We also find that greater capital intensity of the workplace increases a worker's earnings. However, while the inclusion of all of these firm level variables does lower the size of the coefficient on foreign ownership by more than 50 per cent, it remains positive and significant. In other words, our results on the current wage rate suggest that while controlling for observable human capital, job and firm characteristics across workers that there is some correlation between these and foreign ownership, they fail to explain fully the foreign ownership wage premium.[11]

[Table 4 here]

Our discussion of the theoretical literature outlined why one might expect a foreign wage premium for workers that are engaged in on the job training, while for

other workers this is unlikely to be (as) important.[12] We therefore divided our sample into those workers that currently received or have received on the job training in the past (OJT) and those that never had (N-OJT) and ran our OLS model of earnings determination including all our control variables for these separately, as given in columns 5 and 6 and of Table 4, respectively.[13]

As can be seen, the coefficient for the N-OJT is smaller than for the overall sample and statistically insignificant, implying that these are not characterized by a foreign ownership premium. In contrast, as is in line with our theoretical model, workers with on the job training have higher earnings the higher the degree of foreign ownership as indicated by the large positive and significant coefficient on the foreign ownership. Specifically, each per cent increase in foreign ownership increases the hourly wage rate of workers with on the job training by 0.26 per cent. One should also note that when we ran similar specifications including all controls for the whole sample, or for the OJT and non-OJT sub-samples, using a foreign ownership dummy this turned out to be insignificant, further suggesting the importance of accounting for different degrees of foreign ownership.[14]

Starting Wages

Our results on current earnings show that the foreign wage premium only exists for workers with on the job training, which is consistent with our theoretical model. As they spend time in the firm their wage profile will be steeper than that of their domestic firm counterparts. We next examine how foreign ownership affects the starting wage of workers. In doing so we are faced with one particular obstacle. Although we know

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[11] We also investigated whether the relationship may be non-linear by including higher order terms, but in all cases these were insignificant.

[12] Of course formal on the job training is not the only route through which workers acquire human capital in a firm. Informal training and/or learning may also be important. One may expect, however, that these forms of learning are highly correlated to formal training.

[13] From the theoretical model one may expect that workers in foreign firms may receive more training, hence it would be interesting to look at the duration of training received. Unfortunately, the data on the duration of on the job training are for the most part poor or missing.

when a worker started in the firm and at what wage and occupation, we only know the current degree of foreign ownership for our sample of workers.[15] We thus make the assumption that foreign ownership has remained constant over time, at least in so far as the earliest starting wage is observed.[16] Using the information on workers' earnings at the start of their job in the firm, we regressed the real hourly wage rate on the degree of (current) foreign ownership first for workers who have received on the job training over time in the firm, as shown in the first three columns of Table 5. Accordingly, the foreign ownership wage premium without any controls is positive, but insignificant. As we add the human capital characteristics and subsequently job and firm level controls to the regression, shown in columns two and three, the size of the coefficient turns negative, but remains insignificant. As shown in the fourth and fifth column of Table 5, for the case of workers who do not receive on the job training we find a positive foreign wage premium, with and without including human capital controls. However, as soon as we add job and firm level controls the coefficient falls considerably in size and becomes insignificant. This suggests that once other factors are accounted for, workers in domestic owned firms receive the same starting wage as those in foreign firms if they do not receive job training in the future.

One should note that similar starting wages between foreign and indigenous workers who (will) receive on the job training are consistent with our theoretical model. This can arise because of the technological parameters in the production functions of firms. It may also be that since workers at the start of the contract only share in the cost

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[14] Detailed results available from the authors on request.

[15] Strictly speaking for a sub-set of workers, namely those that have started working the firm in years for which we can link firm level information on foreign ownership from previous waves, we can also find the degree of foreign ownership at the start of their job. However, given the number of firms that had been added since the start of the survey so that no previous information was available and the large number of missing values across the years on foreign ownership even for those firms that are continuously observed, our sample size would have been reduced to less than a quarter of the size used for the current wage regressions.

[16] For the firms for which we had earlier information on foreign ownership, it appears to have changed very little, although we can only observe foreign ownership no earlier back than six years.

of human capital acquired in the first period, that wage differences are just too low to be picked up statistically. One could also conjecture that in developing countries like Ghana credit constraints may prevent workers from falling below a certain wage level. Lower wage bounds like credit constraints, efficiency wages or minimum wages do not prevent on the job training and subsequent wage premium differences from taking place in our and other theoretical on-the-job-training models although as Acemoglu and Pischke 1999(a) show they will lead to a more compressed wage distribution. The data in the empirical section indicates, however, that credit constraints are an unlikely explanation for foreign and domestic firms not having a statistically significant difference in their predicted starting wage. This can be easily seen from Table 1 where there are obvious differences in average starting wages between firm types, so that it is only when we control for personal and job characteristics that the difference becomes insignificant.

[Table 5 here]

Wage Growth

The evidence presented thus far shows that workers with on the job training receive a higher wage premium the greater the degree of foreign ownership when considering their current wage, but not their starting wage. This suggests that the premium is acquired as the worker spends time and trains in the foreign owned firm. In order to verify this we now examine how foreign ownership affects an individual's wage growth within a firm.

The information available to us allows us to calculate total wage growth experienced by workers since the start of the job. Clearly, workers who have spent longer time at a firm are more likely to have experienced greater wage growth for reasons such as seniority effects and greater bargaining power, amongst other things, so that this must be controlled for. One possibility is simply to calculate the average annual wage growth by dividing total wage growth by job tenure. This necessarily restricts the effects

of tenure to be linear on wages, so that we instead rather use total wage growth as our dependent variable, but include tenure and its squared value as controls for time spent in the firm. Additionally, it must be pointed out that differences in tenure may also reflect differences in starting dates, and hence wage growth may capture different economic conditions at the time of the start of the job. We thus also included time dummies in all our wage growth regressions. Finally, one should note that by examining the determinants of wage growth we are able to purge any other unobservable, time invariant determinants of wages that we may have not been able to control for given the information in our data set from the regression.

The results of our wage growth regressions are given for workers with on the job training in the first column of Table 6. The positive and significant sign on the foreign ownership variable indicates that the higher the degree of foreign ownership of a firm, the greater the growth rate of a workers' wage. We subsequently also included our set of human capital, job and firm level controls to allow for greater wage growth due to these. For example, those with greater human capital may also be more likely to become more proficient at the task they perform and hence be rewarded with greater wage growth. If these higher ability individuals are also more likely to work for firms with greater foreign ownership then this could explain the greater wage growth associated with foreign ownership. However, as can be seen from the second column of Table 6, their inclusion does not significantly alter the conclusion that greater foreign ownership results in greater earnings growth if the worker receives on the job training.

We conducted the same exercise for our sample of workers who do not receive on the job training, the results of which are provided in columns three and four of the same table. As can be seen, whether we include our human capital, job and firm controls or not, in no case does foreign ownership act to increase a worker's earnings growth. Our empirical findings are, hence, in line with the predictions of the model which

suggests that workers receiving training will experience higher wage growth in foreign firms, while there should be no such differential between workers in foreign and domestic firms that do not receive training.

[Table 6 here]

Section V: Concluding Remarks

This paper shows theoretically that one explanation for the fact that foreign firms pay higher wages than their domestic counterparts may be the provision of on-the-job training. A number of theoretical models predict that foreign firms train more and have higher wage growth, while starting wages may be higher or lower. Our empirical analysis based on data for manufacturing firms in Ghana provides evidence that is in line with the theoretical predictions. While we find no statistically significant difference in starting wages of trained and untrained workers in foreign and domestic firms (once other individual and firm characteristics are controlled for) we find that workers receiving on-the-job training in foreign firms experience higher wage growth than workers being trained in domestic firms. By contrast, there does not appear to be any difference in wage growth between workers not receiving training in either foreign or domestic firms.

One more general conclusion to be drawn from our analysis is that host countries may benefit from the presence of foreign owned firms, particularly if they encourage them to train their workers. Apart from leading to increases in wages to workers employed by multinationals, training directly increases the host country's level of absorptive capacity by improving its stock of human capital (see, e.g., Keller, 1996). Also, movements of trained workers from foreign to domestic owned firms may cause indirect productivity spillovers to the domestic sector (see, for instance, by Fosfuri, Motta and Ronde, 2001), as workers apply their new skills in domestically owned firms or set up their own business. Görg and Strobl (2005) provide evidence for such spillovers

through worker mobility using the same data for Ghanaian manufacturing firms as used in this paper.

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Table 1: Summary Statistics (Means)

	Foreign	Domestic
Log(Current Wage)	1.56	1.05
Log(Starting Wage)	1.36	0.99
Wage Growth	0.20	0.06
Tenure (years)	8.3	5.4
Years Schooling	11.3	10.5
Employment (L)	244	54
Capital/L	0.11	0.03
Profit/L	0.009	0.002

Notes: All nominal variables were converted to real values.
Capital, and Profits in millions of CEDI.

Table 2: Sectoral Distribution

	% Foreign across sectors	% Indigenous across sectors	% of Foreign within sectors
Bakery Goods	0.0	12.4	0.0
Chemical Products	4.9	4.4	25.0
Food Products	24.4	13.9	34.5
Furniture	12.2	21.2	14.7
Garments	4.9	14.6	9.1
Machinery	4.9	2.9	33.3
Metal Products	19.5	21.2	21.6
Textile	9.8	1.5	66.7
Wood Products	19.5	8.0	42.1

Table 3: Sectoral Comparison of Profit, Capital Intensity, and Size

	Profit/L		Capital/L		L	
	I	F	I	F	I	F
Chemical Products	0.012	0.006	0.16	0.53	93	82
Food Products	0.005	0.025	0.05	0.13	108	214
Furniture	0.002	0.002	0.02	0.03	91	145
Garments	0.002	0.000	0.01	0.04	30	61
Machinery	0.000	0.011	0.08	0.05	18	66
Metal Products	0.005	0.005	0.02	0.07	42	252
Textile	0.001	0.004	0.08	0.13	35	583
Wood Products	0.001	0.011	0.06	0.09	149	261

Notes: I - Indigenous; F - Foreign

Table 4: Current Wage

	(1)	(2)	(3)	(4)	(5)	(6)
FOR	0.649***	0.458***	0.377***	0.085*	0.262**	0.072
	(0.071)	(0.050)	(0.048)	(0.047)	(0.131)	(0.051)
PROF/L	---	---	---	11.210***	14.070***	11.502***
				(1.539)	(3.175)	(1.762)
CAP/L	---	---	---	0.761***	0.671***	0.782***
				(0.135)	(0.234)	(0.169)
L	---	---	---	0.478***	0.162	0.588***
				(0.075)	(0.182)	(0.088)
Constant	1.089***	3.183***	2.641***	1.386***	-0.709	0.945***
	(0.025)	(0.131)	(0.256)	(0.309)	(0.551)	(0.248)
Human Capital	No	Yes	Yes	Yes	Yes	Yes
Job Charact.	No	No	Yes	Yes	Yes	Yes
Firm Charact.	No	No	No	Yes	Yes	Yes
Sample	Total	Total	Total	Total	OJT	N-OJT
Observations	1364	1364	1364	1364	331	1033
F(b_j=0)	93.9***	52.7***	39.2***	41.4***	12.9***	31.1***
R-squared	0.06	0.46	0.58	0.66	0.73	0.66

Notes:

Robust standard errors in parentheses. Dependent variable is the log of wage rate. ***, **, and * signify one, five and ten per cent significance levels, respectively. Human capital characteristics include: education dummies (9), actual work experience at the start of the job and its value squared, Ghanian language reading ability dummy, Ghanian language writing ability dummy, English language speaking ability dummy, English reading ability dummy, simple calculation ability dummy, gender dummy, marital status dummy, and African ethnicity dummy. Job characteristics include tenure and its value squared, occupation dummies (19), current on-the-ob-training dummy, past on-the-job-training dummy, permanent worker dummy, and union status dummy. Firm characteristics include regional dummies (3), sectoral dummies (9), state ownership dummy, and size (employment).

Table 5: Starting Wage

	(1)	(2)	(3)	(4)	(5)	(6)
FOR	0.212	-0.063	-0.165	0.304**	0.214*	0.096
	(0.294)	(0.295)	(0.330)	(0.123)	(0.114)	(0.124)
Constant	0.808***	6.916***	-0.150	1.291***	6.511***	11.141***
	(0.218)	(0.378)	(1.254)	(0.068)	(1.646)	(1.584)
Human Capital	No	Yes	Yes	No	Yes	Yes
Job Charact.	No	No	Yes	No	No	Yes
Firm Charact.	No	No	Yes	No	No	Yes
Sample	OJT	OJT	OJT	N-OJT	N-OJT	N-OJT
Observations	331	331	331	1033	1033	1033
F(b_j=0)	6.3***	5.5***	4.7***	6.1***	9.5***	8.0***
R^2	0.37	0.47	0.59	0.17	0.34	0.43

Notes:

Robust standard errors in parantheses.

Dependent variable is the log of wage rate. ***, **, and * signify one, five and ten per cent significance levels, respectively. We include year dummies for starting year. Human capital characteristics include: education dummies (9), actual work experience at the start of the job and its value squared, Ghanian language reading ability dummy, Ghanian language writing ability dummy, English language speaking ability dummy, English reading ability dummy, simple calculation ability dummy, gender dummy, marital status dummy, and African ethnicity dummy. Job characteristics include tenure and its value squared, starting occupation dummies (19), permanent worker dummy, and union status dummy. Firm characteristics include regional dummies (3), sectoral dummies (9), and a state ownership dummy.

Table 6: Wage Growth

	(1)	(2)	(3)	(4)
FOR	0.512*	0.546*	0.150	0.181
	(0.278)	(0.316)	(0.107)	(0.122)
Constant	-0.054	-3.670***	-8.174	-16.65***
	(0.148)	(1.083)	(5.367)	(5.394)
TIME	Yes	Yes	Yes	Yes
Human Capital	No	Yes	No	Yes
Job & Firm Charact.	No	Yes	No	Yes
Sample	OJT	OJT	N-OJT	N-OJT
Observations	331	331	1033	1033
F(b_j=0)	6.4***	3.3***	6.4***	3.9***
R-squared	0.38	0.56	0.18	0.30

Notes:
1. Robust standard errors in parantheses.
2. Dependent variable is the wage growth rate.
3. ***, **, and * signify one, five and ten per cent significance levels, respectively.
4. TIME are year dummies for starting year.
5. Human capital characteristics include: education dummies (9), actual work experience at the start of the job and its value squared, Ghanian language reading ability dummy, Ghanian language writing ability dummy, English language speaking ability dummy, English reading ability dummy, simple calculation ability dummy, gender dummy, marital status dummy, and African ethnicity dummy.
6. Job characteristics include tenure and its value squared, starting occupation dummies (19), current occupation dummmies (19), permanent worker dummy, and union status dummy.
7. Firm characteristics include regional dummies (3), sectoral dummies (9), and state ownership dummy.

Figure 1: The wage profile for foreign and domestic firms.