Regional Project on Enterprise Development (RPED)
Ghana Manufacturing Enterprise Survey (GMES)
Waves I - V (1991-97)

Explanatory Note: Individual Data and the Creation of Firm-Level Human Capital Data

This note provides a brief discussion of the treatment of the individual-level data gathered for samples of workers and apprentices within each of the firms interviewed during the first three waves of the Ghana survey. It should be read in conjunction with the main explanatory note accompanying this dataset titled "Background Information on the Use of Dataset".

Treatment of Data on Workers & Apprentices

In conjunction with the firm-level interviews, two sets of questions, with a considerable degree of overlap but some differences, were asked of a sample of each firm's workers and also apprentices, where they had apprentices. These questions can be found in the section entitled "Appendices to Labour Market Questionnaire". The objective was to interview up to 10 workers in each firm who constituted a representative sample of the firm's workforce - as broken down by the occupational structure reported by the firm when giving the total employment figures. A random sample of the firm's apprentices were also then chosen for interview separately.

The raw data collected from these interviews is contained in the relevant record files within the Wave 1-3 folders, these being:

Wave I	Rec 19 - Rec 22
Wave II	Rec 220 - Rec 226
Wave III	Rec 326 - Rec332
Wave IV	S6A
Wave V	F13

The substantial amount of organisation and analysis of the raw data has been undertaken and the results of this work is made available in a data file called ALL17C. A list of the main variables derived is included in table 1.5 below.

Treatment of Earnings - aggregation of wages and other allowances

In Ghana, workers typically receive a number of allowances in addition to their base salary which frequently represents a substantial proportion of their total remuneration. Total earnings are thus calculated by aggregating worker's wages with a number of allowances (in cash or in kind) that they typically receive, including food allowance, housing allowance, clothing allowance, transport allowance, Christmas bonus (13th month), production or merit bonuses or other allowances.

In wave 1 of the survey, the allowances given by firms to their workers were gathered in the firm level interviews (not in the individual-level interviews) and hence have had

to be added to the worker level wage figures to generate the total earnings variable EARNM. In waves 2 and 3, all of the data on both wages and allowances was collected at the worker/ apprentice level. In waves 4 and 5 both the workers and apprentices were asked their wages for the previous year. It is this recall question that is used to construct two years of data for both the wave 4 and the wave 5 questionnaires. Asking these recall questions presented some problems particularly in wave 5. IT IS IMPORTANT TO NOTE THAT FOR WAVE 5 THE ALLOWANCES SHOULD NOT BE ADDED TO THE WAGES AS THE WAGE NUMBERS ALREADY INCLUDE ALL ALLOWANCES (EXCEPT CHRISTMAS AND PRODUCTION BONUSES). This is only true for wave 5 and is a major inconsistency in how the data has been collected.

Researchers wishing to model wage data and allowances separately may do so by reference to the original data files keeping in mind this problem with how the questions were asked in wave5.

Treatment of Educational Achievement

The surveys have collected information on the educational levels of both workers and apprentices employed by each of the firms. Individuals were asked to indicate the highest levels of formal education that they had completed, including both school level education and post-school education. This was used to construct a series of dummy variables in two groups - see table below.

The dummy variables for highest level of formal education completed were then used to construct a continuous variable (EDUC) which proxies the total number of years of education each individual should have received in reaching these educational standards.

A separate variable on years of schooling (YEARSC) was also derived by taking the difference between the individual's year of birth and reported year of leaving school, less 6 years assuming that this is the average age at which primary education starts. This variable differs from the EDUC variable to the extent that individuals have entered school at less than 6 years of age, repeated school years or missed out years of schooling altogether.

Occupational Classification

The breakdown of workers into different occupational classes has been undertaken on a consistent basis across the waves of the survey. These are management (MGMT), administration or professionsal (ADMINP), sales (SALES), supervisor (SUPER), technical (TECH), production or support worker (PROS), master (MASTER) or apprentice (APPREN). These classifications at the individual level can be linked with the breakdown of workers at the firm level and has been used to create a weighted average of the human capital stock of the firm. The data file which contains a breakdown of the firm's labour composition is made available as file LABMAR17.

Finally a SAS program is available to create the weighted firm-level average of human capital which can be run with the production function. The SAS programme is called HUMANCAPITAL.

Table	Listing of Variables with definitions available in ALL17C		
Variable	Label	Mean	N
FIRM	Firm Identification Number	129.281638	8692
WID	Worker Identification Number	9.4234929	8692
MALE	Dummy if Worker is Male	0.8013116	8692
AGE	Age of the worker	31.8335445	8681
AGESQ	Age of the worker Squared	1168.37	8681
YEARSC	Imputed Years of Schooling	11.7078534	8595
NONE	No Education	0.0601382	8680
EDUC	Formal Years of Education	10.6917571	8662
UNIV	University education Completed	0.0160138	8680
TENURE	Years Worked in Current Firm	5.6890976	8677
MGMT	Dummy if worker Management	0.0447538	8692
SALES	Dummy if worker Sales staff	0.0921537	8692
TECH	Dummy if worker a technician	0.0683387	8692
SUPER	Dummy if worker a Supervisor	0.0793833	8692
MASTER	Dummy if worker a Master	0.0819144	8692
APPREN	Dummy if worker an Apprentice	0.259434	8692
HOURS	Weekly Hours Worked	45.8784514	8692
WAVE	Round Dummy	4.4193511	8692
EARNBT	Monthly Earnings Before Tax	101160.85	8315
PROS	Dummy if a production or support worker	0.3087897	8692
ADMINP	Dummy if worker Administrator/Profession	0.0650023	8692
SKILL	Dummy if skilled (mgmt+adminp+sales+super)	0.2812931	8692
EARN77	Real Monthly Earnings before Tax (1977 p	151.085146	8315
LNEARB77	Log of Real Monthly Earnings before Tax	4.5812158	7740
REARNBT	Real monthly earnings before tax (1991 p	25780.2	8315
RHEBT	Real hourly Earnings before Tax (1991 pr	139.313110	8315
EARNMUSD	Monthly earnings in US dollars	64.111444	8315
EARNMPPP	Monthly earnings in US ppp dollars	189.297526	8315
SOMPRIM	Some Primary Education	0.0087437	8692
PRIMCOM	Primary Education Completed	0.6938564	8692
SECCOM	Secondary Education Completed	0.2051312	8692
PEXP	Potential experience (age-years in school-6)	14.1563446	8590
PEXPSQ	Potential expericne squared	338.247613	8590
MANYRS	Imputed education if worker=management	16.2030848	389
ADMINYRS	Imputed education if worker=administrati	15.4964539	564
SALYRS	Imputed education if worker=sales	14.4097744	798
SUPYRS	Imputed education if worker=supervisor	13.0913043	690
TECHYRS	Imputed education if worker=technciain	11.9847458	590
PROSYRS	Imputed education if worker=production o	10.864426	2648
MASTYRS	Imputed education if worker=master	10.341844	705
APPRYRS	Imputed education if worker=apprentice	9.9081032	2209
MANEDU	Years of education if worker=management	14.8946015	389

ADMINEDU	Years of education if worker=administrat	14.6459075	562
SALEDU	Years of education if worker=sales	13.7164366	797
SUPEDU	Years of education if worker=supervisor	11.6927536	690
TECHEDU	Years of education if worker=technciain	10.6273187	593
PROSEDU	Years of education if worker=production	9.7345563	2671
MASTEDU	Years of education if worker=master	9.1946403	709
APPREDU	Years of education if worker=apprentice	9.2187639	2249
MANAGE	Age if worker=management	45.5604113	389
ADMINAGE	Age if worker=administration	38.8884956	565
SALAGE	Age if worker=sales	35.7003745	801
SUPAGE	Age if worker=supervisor	40.0057971	690
TECHAGE	Age if worker=technciain	36.1905565	593
PROSAGE	Age if worker=production or support	33.4039537	2681
MASTAGE	Age if worker=master	31.2189266	708
APPRAGE	Age if worker=apprentice	20.9711368	2252
MANTEN	Tenure in job if worker=management	9.0093188	389
ADMINTEN	Tenure in job if worker=administration	7.0430678	565
SALTEN	Tenure in job if worker=sales	6.5191011	801
SUPTEN	Tenure in job if worker=supervisor	11.1607488	690
TECHTEN	Tenure in job if worker=technciain	7.7812851	594
PROSTEN	Tenure in job if worker=production or su	5.8152378	2677
MASTTEN	Tenure in job if worker=master	6.8645101	711
APPRTEN	Tenure in job if worker=apprentice	1.7288627	2248
MANPEX	Potential experience if worker=managemen	23.3573265	389
ADMINPEX	Potential experience if worker=administr	17.4148936	564
SALPEX	Potential experience if worker=sales	15.2781955	798
SUPPEX	Potential experience if worker=superviso	20.9144928	690
TECHPEX	Potential experience if worker=technciai	18.2610169	590
PROSPEX	Potential experience if worker=production	16.4761905	2646
MASTPEX	Potential experience if worker=master	14.8364154	703
APPRPEX	Potential experience if worker=apprentic	5.0792572	2208
MANERN	Managers real hourly Earnings	476.014562	363
ADMINERN	Administrators real hourly Earnings	346.166762	542
SALERN	Sales personnel real hourly Earnings	198.806777	749
SUPERN	Supervisors real hourly Earnings	223.257387	680
TECHERN	Tehcnicians real hourly Earnings	148.479344	571
PROSERN	Production workers real hourly Earnings	117.431339	2559
MASTERN	Masters real hourly earnings	103.493467	671
APPRERN	Apprentices real hourly earnings	19.4245784	2178
MANEBT	Managers real monhtly Earnings	86569.74	363
ADMINEBT	Administrators real monthly Earnings	65726.79	542
SALEBT	Sales personnel real monthly Earnings	35198.97	749
SUPEBT	Supervisors real monthly Earnings	40604.94	680
TECHEBT	Tehcnicians real monthly Earnings	27354.08	571
PROSEBT	Production workers real monthly Earnings	21598.63	2559
MASTEBT	Masters real monthly earnings	20347.72	671
APPREBT	Apprentices real monthly earnings	4017.78	2178

Table	Breakdown of labour from firms Questionnaire		
Variable	Label	Mean	N
FIRM	Firm identification Number	123.9964768	1703
MANM	Male Management Workers	2.0233357	1328
ADMINM	Male Administrtion Workers	2.6307018	1328
COMMM	Male Comerical Workers	2.8086103	1328
PRODWM	Male Production Workers	41.5302824	1328
MAINTM	Male Maintenance Workers	2.5096718	1328
SUPERVM	Male Supervisor Workers	2.7774229	1328
MASTM	Male Masters	1.9164157	1328
APPRM	Male Apprentices	4.0383205	1328
MAN	All Management Workers	2.1513554	1328
ADMIN	All Administrtion Workers	2.751506	1328
COMM	All Comerical Workers	3.7259036	1328
PRODW	All Production Workers	44.9533133	1328
MAINT	All Maintenance Workers	3.6558735	1328
SUPERV	All Supervisor Workers	3.0911145	1328
MAST	All Masters	2.1295181	1328
APPR	All Apprentices	5.3185241	1328
WAVE	Wave number	4.2061069	1703
SKILLM	Male Skilled Workers	11.2400706	1328
UNSKM	Male Unskilled Workers	49.9946903	1328