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BACKGROUND PAPER TO THE 2007 WORLD DEVELOPMENT REPORT

How are Youth Faring in the Labor Market? Evidence from Around the World

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Abstract.

This paper uses a new standardized micro database for a large set of developing countries to (i) describe the patterns of labor market outcomes for youth, and (ii) to explain the contributions of supply and demand factors to youth outcomes. The paper shows that youth face various difficulties in transitioning to work. This is reflected in their relatively higher unemployment rate, higher incidence of low paying or unpaid work, and a large share of youth who are neither working nor in school. This is especially true for young girls who are found outside the labor market, some engaged in home production. Finally, the paper also finds that cross-country estimates show that changes in the youth relative cohort size is unlikely to have a large effect on how youth are faring in the labor market.

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I. Introduction

Youth transition to work has important implications on youth development and the development of their communities, nations and the world. In order to assess what policies can best assist youth in this transition, we need to know how to measure youth activities in and out of the labor market; what can we learn from existing data on youth time allocations across countries; and what factors affect these time allocations. This paper provides some preliminary answers to these questions. It uses a new standardized micro data base for a large set of developing countries to (i) describe the patterns of labor market outcomes for youth and (ii) explain the contributions of supply and demand factors to youth outcomes.

There are several indicators that are relevant to describe youth outcomes. A description of the time spent in the labor market needs to take into account the important share of young people who are still in school, combine school and work, or temporary withdrawn from the labor market. The types of work youth are doing and the difficulties they are facing in their search activities are most important. To get a full picture of how well youth are faring, it is important to examine more than one dimension of the youth labor market. No one measure provides a complete picture of the health of the labor market for youth, and so multiple measures are needed to analyze youth labor markets in developing economies.

According to the level of country development and the gender and education of youth the relevant indicator could vary. We will list the various indicators and their possible caveats below, but we briefly outline some of the difficulties to keep in mind in defining youth time allocations in developing countries:

- The unemployment rate is typically viewed as a measure of the difficulty finding work, but it also reflects willingness to accept work that is offered. In middle income countries the ratio of youth to adult unemployment rate is high and suggests greater difficulty youth face in finding work. In low income countries, the youth unemployment rate can be very low, except that in urban areas, the more educated and better off portions of the population can have high unemployment rates. It is doubtful that the more educated youth really are facing greater hardships in finding work than are the poorer and less educated youth in developing countries.
- The fraction of the youth who are employed does not account for school enrollment, for the quality of the jobs available, or for some types of work that are unpaid and informal. Almost everywhere young female's employment rate is lower than young male's employment rate, due in part to the lack of measures for household work. Unpaid work is a frequent employment option for youth, especially those in poor households.
- Because of the lack of measures for household work, an important share of youth, particularly young women, are considered out of school and out of work. Others have called this state idleness. However, idleness is difficult to distinguish from productive but unpaid activities conducted in the home.

Empirical evidence of the effect of cohort size and labor demand conditions on youth employment outcomes show that estimates vary with youth characteristics and according to the indicator used. In general, the cohort size seems to have little effect on youth outcomes, while demand conditions have disproportionate effect on youth unemployment, particularly among low skilled and low income households. Adverse demand conditions also reduce employment among youth. However, the resulting slow transition from school can have a benefit by increasing school enrollments .

The next two sections describe the outcome indicators for youth and how they are interrelated. Sections 4-8 present descriptive statistics of individual indicators in a large set of countries disaggregated by gender, skills, income and sector. Section 9 presents the cross country estimates of a simple empirical model of the effect of youth cohort size and labor market demand conditions on time allocations. Section 10 concludes.

II. Labor Market Indicators

What is the time use pattern among young people? Because youth is a period of transition, a description of the time spent in the labor market needs to take into account the important share of young people who are still in school; who are combining school and work; or who are temporarily withdrawn from the labor market. Conclusions regarding the strength of the youth labor market can then differ depending on how youth time allocations are measured. Youth who are not employed in the formal market may be spending time productively in school or in informal production activities, they may be actively seeking work, or they may be total withdrawn from the labor force.

Figure 1: An illustration of youth time use

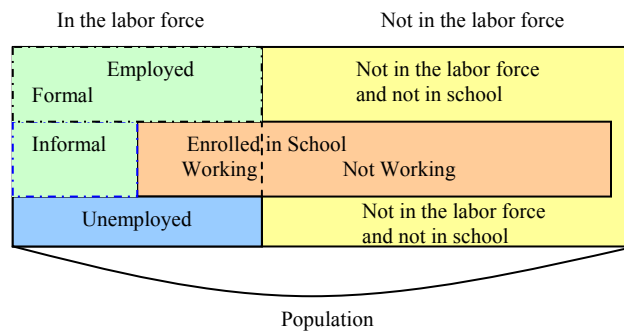


Figure 1 is an illustration of different activities youth might be engaged in at any point in time during their transition to work. For those very young or of secondary school age, a large share remains in school. The older of these often combine school and work. Others have exited school and are found employed, either in the formal or informal sector. A significant share of youth, particularly females, does not enter the labor force, some due to their increased home responsibilities (child care, elderly care,

domestic work, etc.). Others find difficulties entering the labor force and become discouraged. Several young people in the labor force are also found unemployed, searching for work.

The standard labor market indicators include the unemployment rate (UR), the employment rate (ER), and the labor force participation rate (LFPR). Box 1 provides the definitions of these states. To be considered unemployed, an individual must not be employed but actively seeking work. The LFPR is the share of the population that is either employed or unemployed, and the unemployment rate is the share of the labor force that is unemployed. The employment rate is the share of the population that is employed. Because the unemployment rate is measured with respect to the labor force while the employment rate is measured with respect to the population, the two will not be perfectly inversely correlated. In practice, it is can be difficult to distinguish between being unemployed and not being in the labor force because verifying job search for the unemployed is costly. It can even be difficult to distinguish between being employed and being out of the labor force because individuals employed without formal contracts such as in day labor situations or who work for household enterprises may not be counted in official labor market statistics.

Box 1 Definitions

- Population (P): The civilian, non institutionalized population aged 15-24 that is potentially available for work
- Employed (E): During the reference period*, the respondent was either self-employed, working for others for pay, or working for a household enterprise without pay.
- Unemployed (U): Not employed but actively seeking work during the reference period.
- Labor Force ($L = U + E$): The sum of employed and unemployed.
- Not in the labor force ($N = P - L$): The rest of the population not in the labor force.
- Unemployment Rate: $UR = U/L$
- Employment Rate: $ER = E/P$
- Labor Force Participation Rate: $LFP = L/P$
- Home Status Rate: $HR = \{N - [S\&N]\}/P$
- Jobless Rate: $JR = HR + [U/P] = [P - E - S\&N]/P$
- School Enrollment Rate: $SR = S/P$
- School and Work Rate: $S\&LR = (S\&L)/P$

* Reference period: In labor market surveys, questions regarding respondent time allocation are typically framed with respect to activities in the past week, the past month, or the past year.

Two other measures are used in developing country settings, the home status rate (HR) and the jobless rate (JR). The home status rate is the proportion of the population that is neither in the labor force nor in school. It measures the group that has left school

but does not appear to be transiting into the world of formal paid work. Our use of the term “home status” reflects that individuals in this group may be engaged in unpaid work in the household or in home-based enterprise. The jobless rate is the proportion of the population that is either unemployed or idle. It avoids arbitrary distinctions between being out of the labor force and being unemployed.

III. The Interrelationship of Alternative Measures of Youth Time Use

To what extent do these indicators reveal consistent inferences about youth time allocation? Do they reveal unique information or are some essentially measuring the same thing? Are the indicators consistent across countries, or do they mean different things in different settings?

The data used in this study come mostly (although not exclusively) from the World Bank’s Microdata Development Data Platform (DDP). This platform is a compendium of Household Surveys that comprises most of the countries in the world. From this DDP data base we selected those countries with adequate and reasonable data. Adequacy was defined, in general, as being nationally representative. Reasonable data was defined as having good quality data, appropriately documented, and also that has some minimum set of desired variables. Since these surveys were conducted by the National Statistical Offices of each country, it was necessary to perform some minimum standardization to make the variables reasonable comparable from one country to another, and also from one period to another. A description of the countries, years and name of the surveys can be found in Appendix Table IV.

Specific Example

Table 1 is an example of these different indicators in a sample of selected countries. Of the nine countries, the strongest labor markets reflected by a low UR (Vietnam and Uganda) also are the strongest according to high ER and low JR. However, Pakistan has the third lowest unemployment rate but the highest jobless rate. Because relatively few Pakistani youth who are not employed are in the labor force, the Pakistan youth UR is artificially low. This reflects a very high home status rate in Pakistan, particularly for women, and so those without jobs are not counted among the unemployed because they are not counted as actively seeking work. Bulgaria also has a relatively high jobless rate, but has a high unemployment rate as well because, in contrast to Pakistan, a high proportion of the jobless are counted as actively seeking employment.

In evaluating the pattern of labor market indicators in Table 1, it seems that the unemployment rate provides a very noisy measure of the strength of the youth labor market in developing countries. The employment rate provides a better measure of the economy’s ability to generate jobs and the jobless rate is a better measure of how the out-of-school population is faring in the labor market. Among the strongest youth markets according to ER and JR criteria (Vietnam, Poland, Bolivia and Uganda) the UR varies from 0.05 to 0.19. Of the weakest (Bulgaria, Egypt, El Salvador, Pakistan, and Niger)

UR varies from 0.10 to 0.39. Consequently, the unemployment rate exaggerates the strength of the youth labor market in El Salvador and Pakistan and understates somewhat the strength of the Bolivia and Poland markets.

Table 1: Labor market indicators for youth in selected countries

Country	UR	ER	LFPR	HR	JR	SR	SWR
Vietnam	0.05	0.60	0.64	0.05	0.08	0.39	0.06
Bulgaria	0.39	0.24	0.40	0.19	0.34	0.40	0.02
Poland	0.19	0.45	0.56	0.10	0.21	0.69	0.30
Bolivia	0.14	0.51	0.59	0.09	0.17	0.72	0.21
El Salvador	0.11	0.40	0.46	0.23	0.28	0.38	0.06
Egypt	0.24	0.32	0.42	0.19	0.29	0.41	0.02
Pakistan	0.10	0.40	0.45	0.38	0.43	0.19	0.01
Niger	0.21	0.29	0.37	0.35	0.43	0.32	0.03
Uganda	0.06	0.52	0.55	0.09	0.12	0.37	0.01

One of the confounding factors in measuring the strength of the youth labor market is that many of the youth are in school. The standard measure of schooling intensity is the school enrollment rate (SR), the proportion of the population enrolled in school. However, some of these youth may be also working, and so we propose an alternative measure that examines the share of the youth population that is both enrolled and working (S&LR). At ages 15-24, combining school and work is likely to be particularly important in markets with rapidly expanding opportunities but also a need for human capital in the labor market.

In table 1, countries with high enrollment rates also tend to have high rates of combining school and work (Poland and Bolivia). These are countries that appeared weaker according to unemployment rates but stronger according to ER and JR. On the other hand, countries with low ER and high JR tended to have low enrollment rates, suggesting that weak labor market may discourage schooling as well as discouraging labor market participation.

The correlation across indicators in a large set of countries.

While the specific examples above are useful illustrations of the range of patterns observed for youth time allocations, it is useful to generalize the results across more countries. We can get an idea of the interrelationships and unique features of various labor market indicators from the correlation matrix. If two indicators are measuring the same thing, they should be very highly correlated.

As is immediately apparent in Appendix Table II, employment and labor force participation rates, shown in the top panel, are so highly correlated that they can be viewed as measuring the same aspects of the labor market. The correlation is sufficiently high to suggest that variation in youth labor force participation rates across developing countries is due primarily to variation in employment rates. Variation in unemployment

rates appears to be more random, as the correlation between labor force participation and unemployment rates is only about one-third the correlation with employment rates.

Joblessness and home status also appear to measure similar things. As their definitions include many of the same elements, the high correlation is not surprising.

Employment rates are also strongly negatively correlated with unemployment rates. The negative correlation is of similar size with that between the employment and jobless rates. The distinction between the jobless and the unemployment states is that the former includes those not actively seeking work. It seems that weak employment conditions are correlated not just with unemployment but with joblessness more generally, whether or not youth opt to seek work.

Schooling is an alternative youth time use. As one would expect if opportunity costs of schooling matter for schooling decisions, the enrollment rate is negatively correlated with the employment rate and positively correlated with the unemployment rate. However, the strongest relationship is the negative correlation between enrollment rates and home status, suggesting that home responsibilities also serve as important sources of opportunity costs for schooling.

While some pairs of labor market indicators are highly correlated, half of the correlation coefficients are smaller than .4. For the pairs with the smallest correlation coefficients, that suggests that less than 16% of the variation in one measure can be “explained” by the other¹.

Differences among young men and women

Many of the correlations between labor market indicators are similar between men and women. Most prominent is the high correlation between employment and labor force participation rates for both young men and women. However, there are notable differences in some of the other indicators.

- For young women, joblessness and home status are much more highly correlated than for young men, suggesting that variation in female joblessness across countries is more closely tied to variation across countries in female home time.
- Labor force participation rates for young women are more highly correlated with home time use and joblessness, while they are more highly correlated with enrollment rates for young men. That suggests that schooling is a more important reason for men not to enter the labor market while home time use is the more important reason for women not to enter the labor market.
- High unemployment rates are more closely aligned to high enrollment rates for young women than for young men. On the other hand, high unemployment rates are more closely tied to higher jobless rates for young men. The implication is

¹ The square of the correlation coefficient can be interpreted as the R^2 one would get from regressing one of the pair on the other. A correlation coefficient of 0.4 corresponds to an R^2 of 0.16. We use the term “explained” loosely here and do not mean causality but co-movement.

that women respond to weaker labor markets by spending more time in school, while young men either continue seeking work or become discouraged and drop out of the labor force.

Differences among young urban and rural residents

For both urban and rural youth, employment and labor force participation rates are interchangeable labor market indicators. For both, home status and joblessness are also very highly correlated. However, there are notable differences between the geographically differentiated youth.

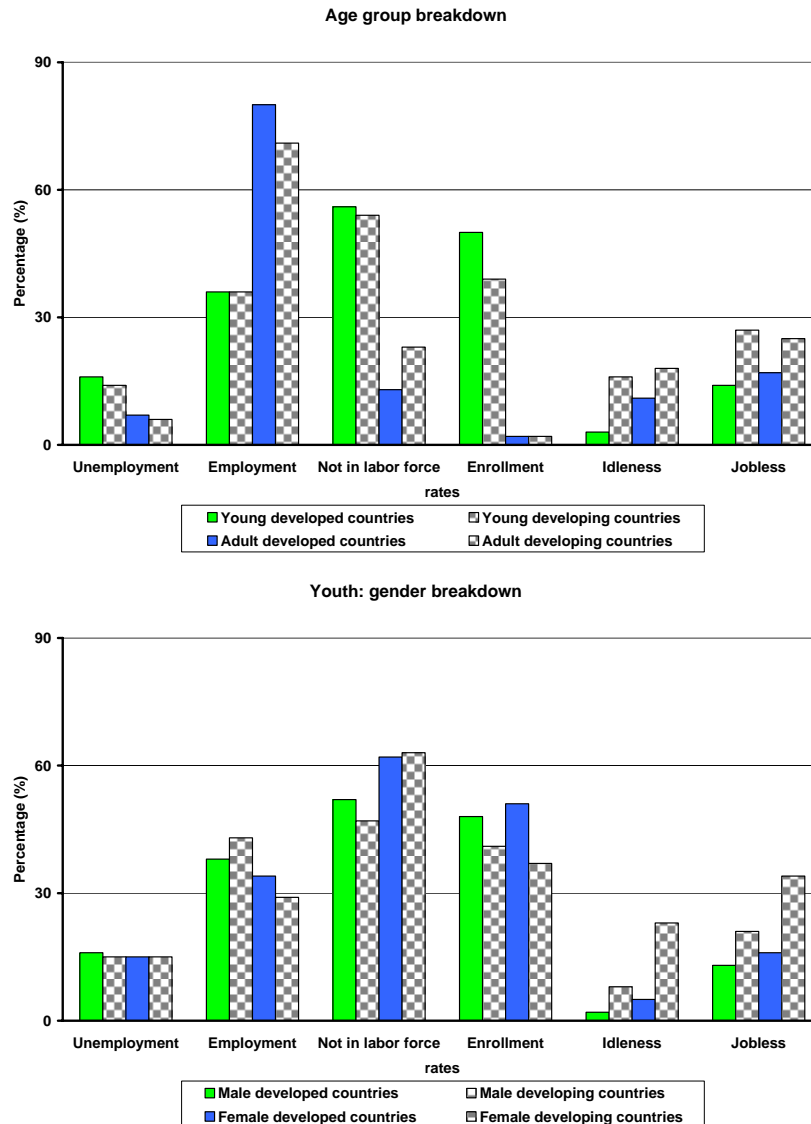
- Unemployment and employment are more closely tied states in rural than in urban markets. Unemployment is also more closely tied to higher enrollment rates and lower labor force participation rates in rural markets. In contrast, urban youth unemployment rates appear relatively uncorrelated with every other measure of labor market success save joblessness for which unemployment is an element. This suggests that variation in youth urban unemployment rates across developing countries is due to idiosyncratic factors that do not affect other measures of urban youth time use.
- Unemployment rates are more highly positively correlated with enrollment rates and employment rates are more highly negatively correlated with enrollment rates in rural markets. Urban unemployment rates are virtually uncorrelated with enrollment rates. The correlations suggest that employment is a more important opportunity cost of schooling for rural youth.
- Youth enrollment rates are more highly negatively correlated with home status and jobless rates in urban than in rural markets. This surprising finding suggests that it is in urban markets that opportunity costs related to the value of home time or of other non market time use are most important in limiting schooling.

The general conclusion is that no single labor market indicator will adequately summarize the state of the youth labor market in a country, but that not all six measures are needed. Because the employment rate and labor force participation rates measure similar things, only one is needed. The employment rate is easier to measure in that it does not require assessing whether the jobless are seeking work. The enrollment rate has significant independent information and is also relatively easily measured. Of the remaining indicators, joblessness is the easiest to measure and it also incorporates much of the information in the home status rate. One might wish to use the unemployment rate rather than the jobless rate because the unemployment rate is most commonly used in international comparisons of labor market strength. Its disadvantage is that it is based on an assessment of active job search among the jobless that requires household surveys and so it can be costly to obtain for budget constrained governments.

IV. School Enrollment vs. Labor Force Participation

Between the ages of 15 to 24, an important share of youth is still in school. While this share is the highest at age 15, it decreases with age as more youth exit schools. Half of developed country youth aged 15-24 are still in school compared to only 39% of developing country youth. These differences in human capital investments will shape the relative production activities and incomes for developing and developed economies into the future.

Figure 2. Median values of the variables by gender, and by sector, and the level of development



There are only slight differences in enrollment rates between young men and women in developed countries with women having the advantage. In developing countries, we find a comparably sized gap favoring young males. There is no difference

in enrollment rates between urban and rural youth in developed countries. In developing countries, there is a large 15 percentage point gap in enrollment rates favoring urban youth.

As young people start leaving school, some join the labor force. An individual is considered part of the labor force if he is either employed or if he is not employed but is actively seeking work. The labor force participation rate is the broadest measure of labor supply—a willingness to provide time to the labor market.

Figure 2 shows that the average youth labor force participation rates are very similar between developed and developing countries. However, adult labor force participation rates are higher in developed than developing countries. There is no difference in female youth labor force participation rates between developed and developing countries. Male youth participate in the labor market with greater frequency in developing countries.

In developing countries, youth are slightly more engaged in the labor market than are youth in developed countries. The gap between developing and developed country youth LFPR is five percentage points for rural youth and only two percentage points for urban youth.. In both sets of countries, male youth have higher labor force participation rates than female youth. In both sets of countries, youth labor force participation rates are higher in rural than in urban areas.

The division between school and labor force participation is not always clearly identified. Many youth combine work and school, some at very early ages. Combining school and work can be detrimental to learning outcomes and could lead to early exit from school. For others, particularly older youth, combining school and work could provide job experience that could facilitate the transition of youth into employment after graduating from school.

V. Youth Unemployment

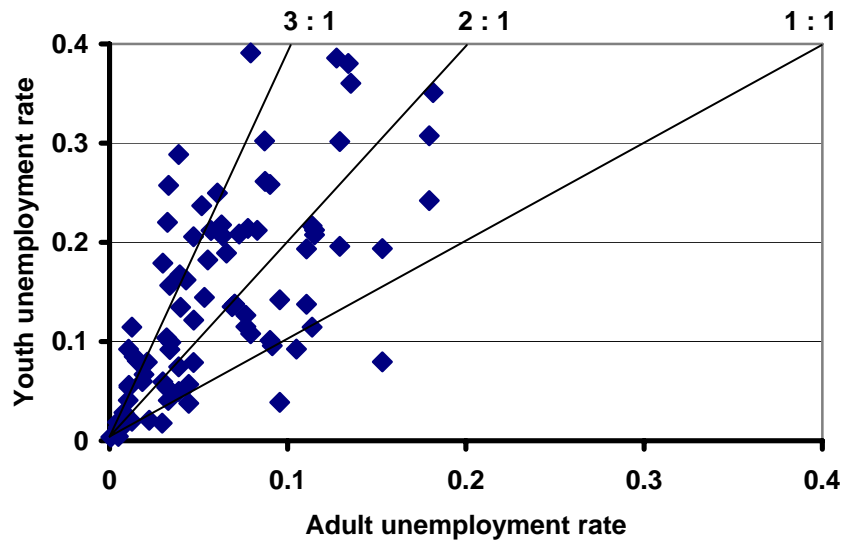
The most commonly used measure of labor market difficulty used in developing countries is the unemployment rate. This indicator is typically monitored on a monthly basis in OECD countries, but is only available on a monthly, quarterly or even annual basis for a few developing countries. Our developing country unemployment measures are based on household survey data for various years between 1990 and 2004.

In every region the difficulty youth face in entering the labor market is evident in higher unemployment rates for young men and women than for older workers. Youth make up 25 percent of the working-age population worldwide, but 47 percent of the unemployed. The estimated global unemployment rate for youth increased steadily from 11.7 percent in 1993 to 14.4 percent in 2003.² Across all markets the youth

² ILO (2004). The ILO produces global and regional estimates based on several national surveys and the ILO Global Employment Trends model.

unemployment rate is 2-3 times higher than the adult unemployment rate, regardless of the level of aggregate unemployment (figure 3). However, there is considerable cross country variation, not only in the levels of youth unemployment but also in the ratio of the youth to adult unemployment rate. A very high ratio in some countries is a signal of atypical youth difficulties in the transition to work and a source of concern for policymakers.

Figure 3: Unemployment is higher for youths than adults



Notes: The 1:1 line represents cases where the estimated incidences among young and adults are identical. The 2:1 (and 3:1) lines represent cases where the estimated incidences among young is twice (three times) as large as adults.

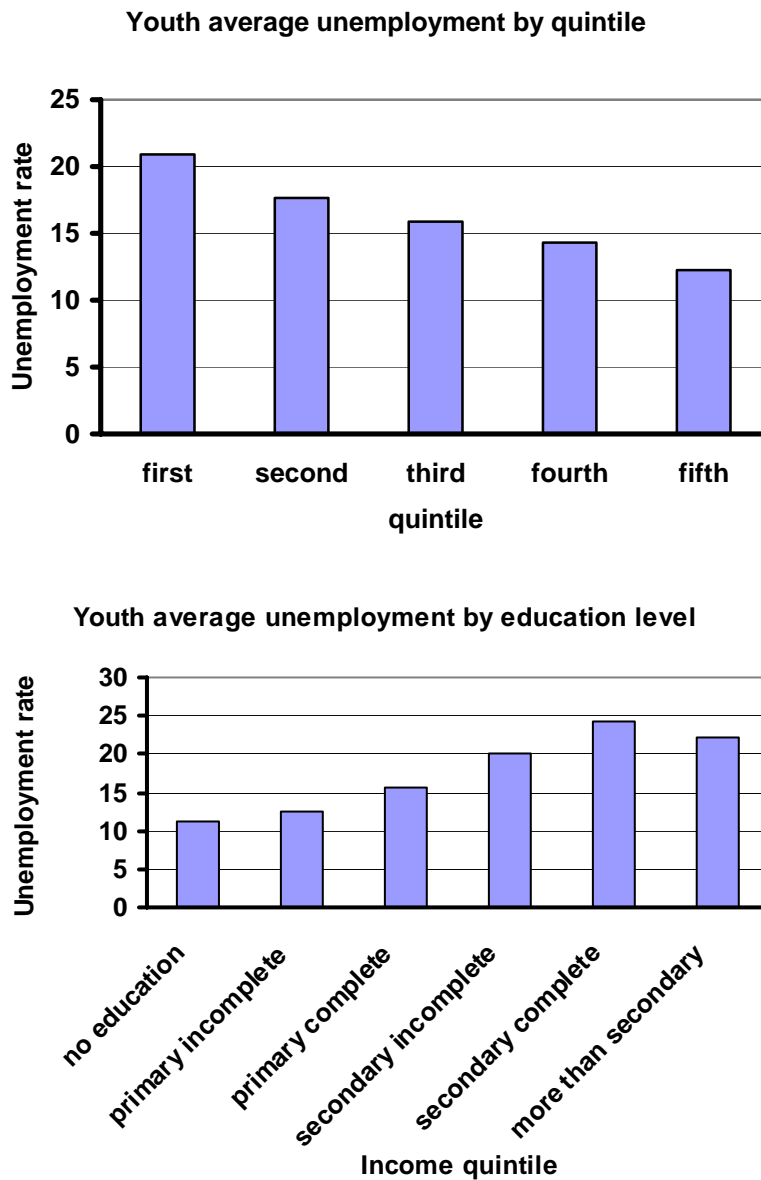
The unemployment rates vary widely across regions, gender, urban and rural sectors and with different individual and household characteristics. The availability of household survey data allow for disaggregating across these different dimensions and a deeper assessment of unemployment among youth (see figure 2).

Overall unemployment rates for youth and adult age groups are very similar in developed and developing countries. Youth rates are more than double the adult rate regardless of the country's development level, with youth unemployment rates averaging in the mid-teens. Male and female youth unemployment rates are virtually identical in developed and developing countries, averaging about 15 percent. In developed countries, youth unemployment rates are highest in rural areas. In developing countries, the opposite pattern holds with urban unemployment rates more than double the rural rates.

According to the ILO, the unemployment rate varies widely across regions, from a low of 7 percent in East Asia to 13.4 percent in industrial economies to a high of 25

percent in the Middle East and North Africa.³ In developing countries, survey data indicate that unemployment rate is highest among youth in MENA and LCR. In SSA and SAR the overall unemployment rate for youth remains low particularly due to the large share of youth in rural areas characterized by low unemployment rate. If fact, even in SSA and SAR, the youth unemployment is high in urban areas.

Figure 4: Youth unemployment varies with income and educational level



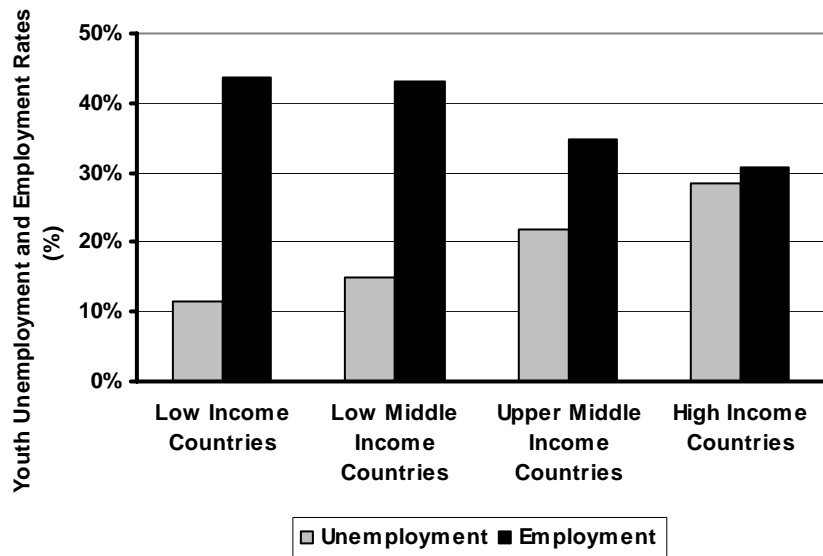
As figure 4 shows the unemployment rate among youth in developing countries also varies according to the income level of the households where they reside and according to their educational level. On average, the youth unemployment rate increases

³ ILO (2004).

with the level of education of youth. Similarly, youth from higher income households are more likely to be found unemployed compared to those from low income households. These patterns are different from what is observed in developed countries. This could be due to the lack of access of low educated and low income youth to income support in developing countries which leaves them with no choice but to find work, as opposed to high income youth who could rely on family support in developing countries for the duration of unemployment.

A similar pattern holds when comparing unemployment rates by level of development. Youth unemployment is more widespread in middle income countries than in low income countries, consistent with the hypothesis that the poorest youth cannot afford to be unemployed. The patterns of youth unemployment and employment rates by development level are shown in figure 5. As country incomes increase, the incidence of unemployment among youth also increases, reaching as high as 30 percent in some high income countries. In low income countries, the employment rate for youth is very high, estimated to be higher than 40 percent in low income and low middle income countries. As country incomes rise, youth employment rates come down, also because they devote more time to schooling.

Figure 5: Unemployment and Employment across countries with different income level



VI. Youth Employment

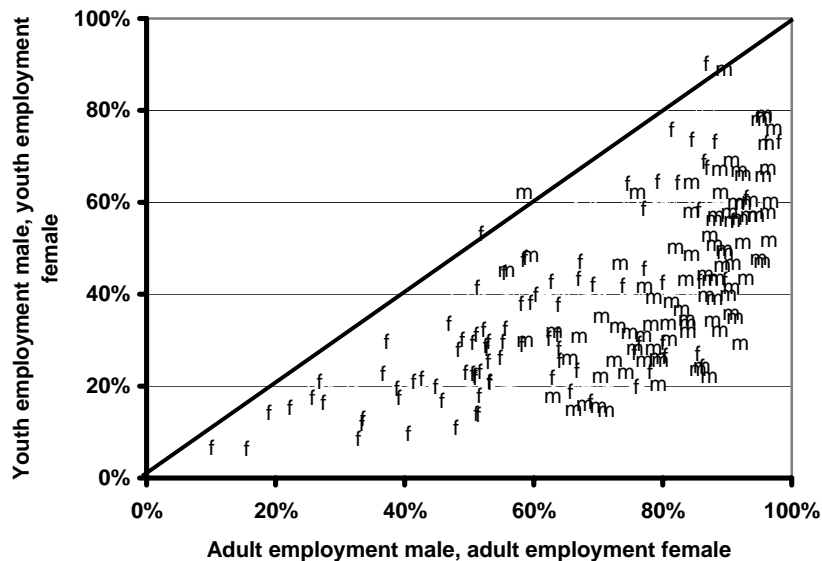
Employment rates have a key measurement advantage over unemployment rates in that the base is the overall population rather than the labor force: the portion of the population that is actively interested in being employed. The labor force reflects both supply and demand factors in that in weak markets, some normally in the labor market will decide to leave the labor force. In stronger markets, some will enter the labor force

who normally would not seek employment. This movement into and out of the labor force clouds the interpretation of the unemployment rate because the labor force shifts will understate both bad and good employment conditions. Because the population is fixed (except for in- or out-migration), variation in employment rates are believed to better reflect variation in demand conditions.⁴

The employment rate for youth is positively correlated with adult employment. As adult employment increase youth employment rate increases (figure 6). However, youth employment is invariably lower than that of older men and women. Some of this difference is due to the large share of youth that remain in school and are not available for work. Adjusting for school enrollment reduces the difference between youths and adults, though the gap persists.

These gaps are greatest between younger and older men. The employment rate for young men is always higher than the employment rate for young women, reflecting a stronger attachment to the labor force among males but also reflecting the greater proportion of young women engaged in home production which is excluded from measured employment.

Figure 6: Employment differences between youths and adults



Note: The 45° line represents cases where the estimated incidences among young and adults are identical. Observations correspond to country aggregates (f=female, m=male).

⁴ For older groups for whom labor force participation rates are very stable over the business cycle, unemployment rates will better reflect variations in labor demand than will youth unemployment rates. For example, many studies use the unemployment rate for males over 25 as an indicator of the overall strength of the labor market assuming that the adult male labor force participation is nearly constant over time. If labor supply were unstable, the adult male employment rate would be a better measure.

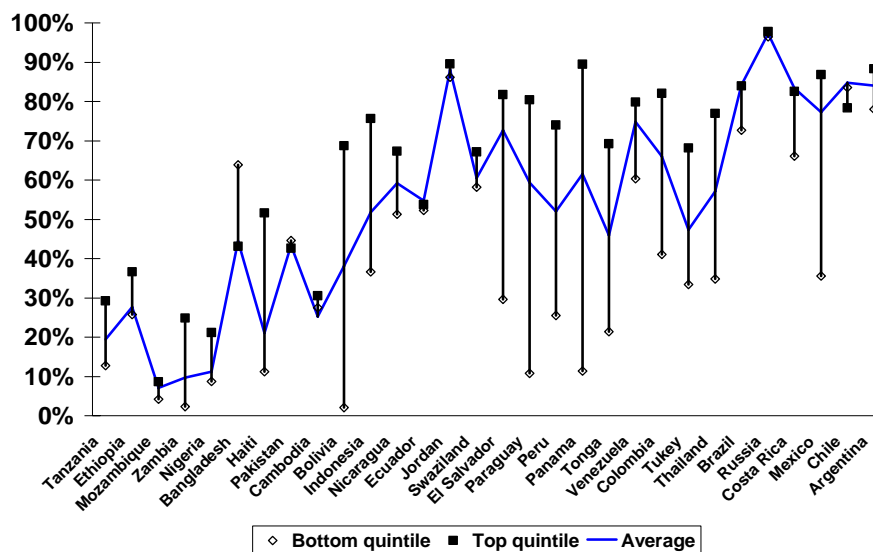
Youth employment rates have the same average in developed and developing countries, but adult employment rates average 9 percentage points higher in developed countries. In both developed and developing countries, young males have higher employment rates than young females. However, the male-female gap is much larger in developing countries. Male youth employment rates are higher in developing than in developed countries, while female employment rates are higher in developed than in developing countries.

Rural youth have higher employment rates than urban youth in both developed and developing countries. Employment rates for rural youth in developing countries exceed those in developed countries, but urban youth employment rates are higher in developed countries.

In developed countries, the most important alternative use of time for those youth not employed is to be enrolled in school. In developing countries, school enrollment is also the most important alternative use of time, but home status is also a prominent use of time for young women. Home status includes informal employment in household production or home enterprise activities that may not be captured in the employment rate. Adding the home status rate to the employment rate eliminates the male-female employment gap in developing countries.

Young people’s access to productive jobs, which allow them to build skills and experience, also varies enormously between those from rich and poor households (figure 7). Youngsters from poor households are far more likely to be engaged in unpaid family labor than those from rich households, in some cases by a substantial margin. The contrast is particularly striking in Latin America, as in Bolivia, Chile, and Paraguay.

Figure 7: Incidence of unpaid family work among youth



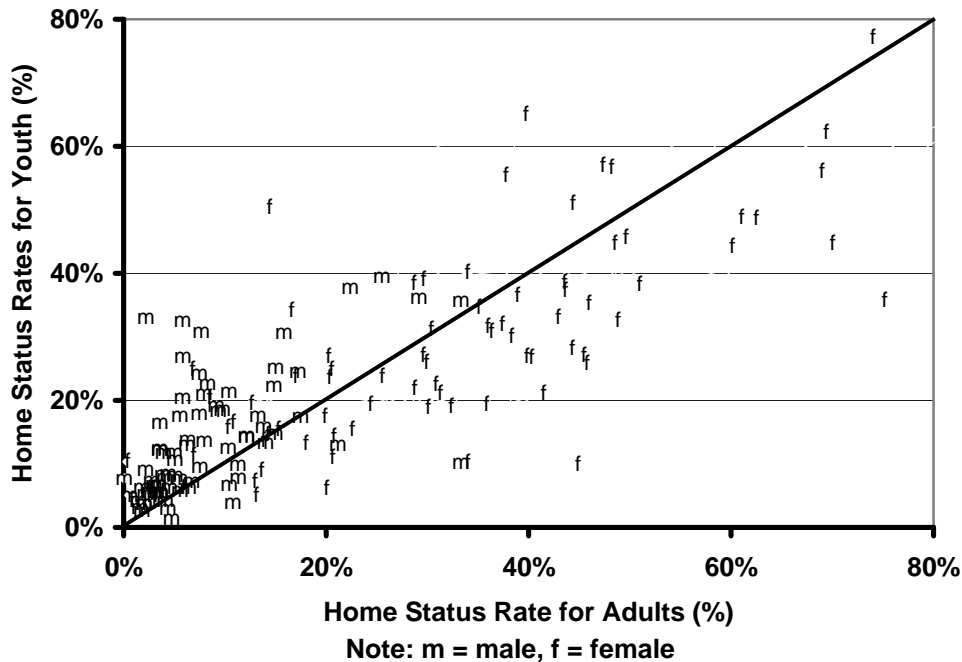
VII. Home Status Rate

Those who are neither employed, nor in school, nor seeking work, are placed in our home category. Some will be working in informal home-based jobs or in unremunerated home production activities and others may be idle. In many countries the proportion of youth who are neither in the labor force nor in school is too large to dismiss as a problem of measurement or a temporary phenomenon. This state barely registers at 3% of developed country youth. It represents 11% of developed country adults, composed largely of housewives and retired. In developing countries, 16% of youth fall into this category. Figure 8 presents a cross-country comparison of young men and women who are neither in school or working compared to the comparable statistic for older men and women in the same country. The 45 degree line would indicate equality in inactivity rates for young and old populations in the country. Points above the 45 degree suggest larger inactivity rates for youth while points below the line indicate higher inactivity rates for adults.

- *Differences in levels.* Female observations [f] almost always lie to the right of the male observations [m], implying a higher incidence of inactivity for females relative to males.

Differences in ratios. Most observations for men lie above the 45 degree line, implying that young men are more likely to be seen as inactive than adult men. The opposite pattern holds for women, implying that is the older women who are most likely to be out of school and out of the labor force.

Figure 8: The incidence of home status



Note: The 45° line represents cases where the estimated incidences among young and adults are identical.

Some of the high estimates may be attributable to measurement problems, particularly for young women working in their households. In Tanzania, the main reason young women said they were not looking for work was their household responsibilities. For young men, the main reason for inactivity was the lack of market work.

The data reveal important differences between males and females in this group—males are predominately discouraged workers, while females are engaged in non-market activities. The high home status rate in developing countries is not cause for concern to the extent that the youth are engaged in productive non-market activities. This is presumably the case for the majority of the 23% of young women who fall into the category. However, many of the 8% of young men who fall into this category are believed to be truly idle—neither engaged in productive activities nor engaged in human capital production. Truly idle human resources represent lost productive potential for the country as well as a potential supply of discontented youth who may be persuaded to find antisocial uses for their time.

VIII. Jobless Rates

Youth are considered jobless if they are unemployed or if they are not in the labor force and not in school. This measure has the advantage over the unemployment rate in that it includes discouraged workers—those who have concluded they have no job prospects and have ceased active job search.

Jobless rates in developing countries are nearly twice those found in developed countries. Youth jobless rates are similar to youth unemployment rates in developed countries. However, youth jobless rates are nearly twice the unemployment rates in developing countries, suggesting that discouraged workers are a more serious issue for these countries. The gap between jobless and unemployment rates are substantially higher for adults than for youth in both sets of countries.

Young women have higher jobless rates than do young men, even though they have virtually identical unemployment rates. The gap is small (3 percentage points) in developed countries, but it is much larger in developing countries. Jobless rates are nearly identical in rural and urban markets in both developing and developed countries. Virtually all developed country jobless youth are considered unemployed (meaning they are still seeking work actively). This is true of urban jobless youth in developing countries as well. However, rural jobless youth in developing countries are generally not seeking work, either because they are engaged in non market work activities or because they are idle.

IX. The Effect of Cohort Size and Labor Market Conditions on Youth Labor Market Success

We are interested in establishing how youth time allocations vary with respect to country business cycles and the relative size of the youth cohort. Following O'Higgins (2003) and Korenman and Neumark (2000), we propose a specification:

$$(1) \ln(L_{it}^Y) = \alpha_0 + \alpha_1 \ln\left(\frac{P_{it}^Y}{P_{it}^A}\right) + \alpha_2 \ln U_{it}^A + \varepsilon_{it}$$

where $\ln(L_{it}^Y)$ is a measure of youth labor market success in country i and year t ; $\ln(U_{it}^A)$ is the logarithm of the adult (A) unemployment rate in that country; and $\ln\left(\frac{P_{it}^Y}{P_{it}^A}\right)$ is the logarithm of the relative size of the youth population to the adult population; and ε_{it} is an error term. The youth group is taken from ages 15 to 24 and the adult population includes all aged 25-49.

The coefficient α_1 measures the impact of an increase in the relative size of the youth cohort on youth labor market success. The typical belief is that atypically large youth cohorts create crowding in the labor market, and so youth will experience greater difficulty in the labor market. If this belief is correct, then $\alpha_1 < 0$. However, if labor markets are sufficiently flexible that they can adapt to rising cohort sizes, the impact on youth unemployment would be negligible and so $\alpha_1 = 0$. Some have even argued that large labor market cohorts, particularly educated ones, might induce economic innovation and expansion, in which case $\alpha_1 > 0$.⁵

Because adults tend to have the most stable employment of all demographic groups, the adult unemployment rate is frequently used as indicator of business cycles. Estimates of α_2 that exceed one suggest that a percentage point increase in adult unemployment results in an increase in youth unemployment of more than one percent. When $\alpha_2 = 1$, the youth unemployment rate responds proportionally to increase in the adult unemployment rate. When $\alpha_2 < 1$, the youth unemployment rate is less sensitive to fluctuations in the adult unemployment rate, and if $\alpha_2 < 0$, the youth unemployment rate reacts counter-cyclically to fluctuations in the adult unemployment rate.

If the error term in (1) is *iid* $N(0, \sigma)$, all the parameters can be estimated using ordinary least squares. However, there may be country-specific, time invariant effects that are ignored in (1) and that can bias the estimates. Suppose that $\varepsilon_{it} = \eta_{it} + \nu_i$ where ν_i is a country-specific fixed effect and η_{it} is a purely random effect uncorrelated with the other regressors. If ν_i is correlated with the country's adult unemployment rate or the

⁵ Note that if we use a negative measure of youth labor market outcomes (eg unemployment) rather than a positive measure (eg employment) as the dependent variable in (1), the expected signs will reverse so that $\alpha_1 > 0$ if crowding harms youth and $\alpha_2 > 0$ if adverse business cycle shocks harm youth.

demographic structure, OLS estimates of (1) will be biased. Differencing the data from a second period t' will yield unbiased estimates of α_1 and α_2 .

$$(2) \ln\left(\frac{L_{it}^Y}{L_{it'}^Y}\right) = \alpha_0' + \alpha_1 \left(\ln\left(\frac{P_{it}^Y}{P_{it}^A}\right) - \ln\left(\frac{P_{it'}^Y}{P_{it'}^A}\right) \right) + \alpha_2 \ln\left(\frac{U_{it}^A}{U_{it'}^A}\right) + \eta_{it}$$

Specification (2) differences away the fixed effect ν_i . We only have two periods of observations for at most 45 countries compared to as many as 93 countries for which we have a single period. Consequently, the cost of using the differenced specification is the loss of almost 50% of the degrees of freedom.

We try multiple positive and negative measures of youth labor market success in assessing how cohort size and business cycle shocks affect the youth labor market. Positive measures include employment rates and labor force participation rates. Negative measures include unemployment and jobless rates. Mixed measures include time use indicators that may remove youth from the labor market including enrollment rates and home status rates. Appendix Table III shows the estimated results for each indicator, and disaggregated by different groups. For example the top panel of the table shows the cross country estimates (the coefficients and t statistics of the relative cohort size, log adult unemployment rate, and the constant term) for youth unemployment rate for the total sample, and by gender, sector, youth educational attainment, household income levels. Three sets of regressions are estimated: the first set showing regressions in levels for all countries; the second set in first differences for the sub-sample of 45 countries where two years of observations were available; and a third set in levels for the same subset of 45 countries. We will discuss each of these indicators in turn.

Youth Unemployment Rates

It is commonly assumed that youth employment prospects will be significantly disadvantaged by unusually large cohorts of new labor market entrants. There is little evidence supporting that proposition in the regressions over a sample of developing countries reported in column 1 of Table III (labeled rpst). In only one-third of the cases is the estimate of α_1 positive and it is never statistically significant at the 5% level. In the remaining cases, the estimates are negative, although also rarely significant. In the second set of estimates where the differenced data is used to remove the possible bias from fixed effects (column headed cpst), we also have no statistically significant evidence of a positive effect of changes in the relative size of the youth cohort on youth unemployment. There is simply no evidence that large youth cohorts cause greater unemployment problems for the young.

Youth unemployment in developing countries is certainly pro cyclical. Looking at the estimates for the column headed luAt, it appears that the youth unemployment rate overall and the female and rural youth unemployment rates are roughly proportional to the adult unemployment rate. The male and urban youth unemployment rates react somewhat less than proportionately to the adult unemployment rate. In changes (second

set of estimates headed α_2), the estimates of α_2 are less than 1 for all of these groups. Although the estimates are not very precise, they are generally more than two standard deviations away from one.

The more interesting results occur when we divide the youth unemployment into education or household income groups. Youth in the lowest education group and in the lowest income quintile respond more than proportionally to the adult unemployment rate. As the youth education level rises, the estimate of α_2 gets progressively smaller, implying that more educated youth are less harmed by adverse business cycles. Although the pattern is not perfectly consistent, the tendency is that as household income level rises, the estimate of α_2 also decreases, and so it is the poorest youth who are most adversely affected by adverse business cycles. In the differenced specification, the pattern remains for education groups, with the two least educated groups facing more than proportional increases in unemployment. The pattern with respect to income quintiles does not hold up, except that the unemployment of youth in the highest income quintile is the least sensitive to business cycles.

Youth Employment Rates

In only four cases does an atypically large youth cohort affect youth employment rates, and in three of the cases, the impact is positive. In changes all of these effects disappear. We conclude that there is no evidence that atypically large youth cohorts cause youth employment rates to fall.

Negative estimates of α_2 are consistent with a negative impact of increased adult unemployment rates on youth employment rates. In the level regressions, every estimate is negative and most are statistically significant. Magnitudes do not vary greatly across genders or across urban and rural markets. There is modest evidence that the adverse impact is greatest for the least educated. In the differenced form equations reported in the second set of estimates, the employment responses for male and female youth and for urban and rural youth are all insignificantly different from zero. Similarly, the apparent negative effect of adult unemployment on youth employment rates also disappears. We conclude that youth employment rates are not sensitive to fluctuations in adult unemployment.

Youth Jobless Rates

There is more evidence that the crowding from atypically large youth cohorts increase the jobless rate. In the level regressions of Table III, 11 of 16 estimates of α_1 are positive and five are statistically significant. However, the effect is fragile with respect to the presence or absence of country fixed effects. In differenced form, 15 of 16 estimates of α_1 are negative, suggesting no systematic penalty in the form of youth joblessness resulting from large youth cohorts.

Youth joblessness rises with increases in the adult unemployment rate. The estimates of α_2 are all positive, ranging narrowly between 0.08 and 0.35. The similarity

in estimated effects in the levels specifications suggests uniform joblessness responses across demographic groups. However, in differenced form, the adverse effects are less consistent. The differenced estimates suggest that youth joblessness is insensitive to changes in the adult unemployment rate overall, and for subgroups including only males, only females, only urban youth, or only rural youth. There is more evidence of rising joblessness in response to rising adult unemployment for the less educated groups with the exception of the completely uneducated. Youth in different income quintiles face similar increases in joblessness in response to rising adult unemployment, and so the burden of joblessness is not concentrated among the poorest youth.

Labor Force Participation Rates

Youth are considered to be in the labor force if they are employed or if they are unemployed (not employed but actively seeking work). This is considered the broadest measure of youth notional labor supply. The level regressions show a mixed response of youth labor supply to cohort size, with some evidence that the least educated increase labor force participation and the most educated decrease labor force participation in response to crowding from an unusually large cohort. However, the different regressions show that increases in relative cohort size raise labor force participation for all demographic groups, although the estimates of α_1 are only occasionally significant. The estimates suggest that a 10% growth in the relative size of the youth cohort results in a 3.5% increase in the youth labor force participation rate. The labor supply response is bigger for young males than for young females. The increase is identical for rural and urban youth. The biggest increases are for youth from wealthier families. The pattern by education groups is U-shaped with the biggest increases for the most and least educated, although the coefficient estimates for the least educated are not statistically significant. We conclude that developing country youth in unusually large cohorts respond by increasing labor supply behavior compared to youth in smaller cohorts.

The estimates of α_2 are more consistent across the levels and differenced regressions. They show that in general, increases in the adult unemployment rate cause a modest reduction in the growth of youth labor force participation. The magnitudes are small—a 10% increase in the growth of adult unemployment rate causes a 1% reduction in the growth of youth labor supply. The effect is uniform across genders and across urban and rural labor markets. There is no apparent pattern of larger or smaller labor supply responses by education level or by household income level.

Youth Home Status

There is a concern that crowding due to unusually large cohorts or discouragement due to weak labor demand can cause youth to drop out of school and to drop out or never enter the labor market. This state is referred to as idleness. However, idleness is difficult to distinguish from productive but unpaid activities conducted in the home. Nevertheless, variation in youth home status related to cohort size or adult unemployment are likely to be indicators of increased idleness because non-market

productive household activities would be expected to be related to longer term social or life cycle plans rather than short term economic circumstance.

Reflecting the pattern found for labor supply behavior, the level equations show significant evidence of rising home status in response to large cohorts, but the cross-sectional pattern appears to be driven by country fixed effects. In differences, countries experiencing growth in the relative size of their youth cohorts show decreasing home status rates across every demographic group. The effects are quite large, with the biggest reductions for male and urban youth. The most educated youth and youth from wealthier families demonstrate the greatest declines in home status in response to growth in the size of the youth cohort. Reductions in home status imply either rising labor supply, rising enrollment, or both.

Interestingly, home status is virtually insensitive to fluctuations in the adult unemployment rate. Whether home status reflects productive or unproductive uses of youth time, variation in home status appears uncorrelated to short term fluctuations in the strength of labor demand in the economy. Variation in home status across countries does not appear to be a result of short-term variation in the strength of the labor market across countries.

Youth Enrollment Rates

Estimates of α_1 are very consistent across the level and differenced enrollment rate equations. Of concern is that youth in unusually large cohorts reduce their time in school. The effect is large—a 10% increase in the relative size of the youth cohort causes a 7% reduction in the youth enrollment rate. The effect is even larger for female and rural youth. There is some evidence in the levels equation that the largest negative effects are for youth from the poorest income quintiles, but none of the effects are statistically significant in the differenced equations. We conclude that youth respond to large cohort size by reducing their investment in schooling and that the effect appears to occur across all demographic groups.

The levels regression suggests that countries with large adult unemployment rates induce higher youth school enrollment rates. The effect is found for all demographic groups, but is generally of modest size. However, the effect disappears in the differenced data, suggesting that youth enrollment rates do not respond to increases in the adult unemployment rate.

X. Concluding Remarks

In this paper we take advantage of a new standardized micro data base to describe the time use pattern of youth in the labor market in a large set of countries. The transition of youth to work is complex and requires the use of multiple indicators to better understand how well youth are fairing and what influences most their transition to work.

In almost all countries, youth face some difficulties in transitioning to work. This is reflected in their relatively higher unemployment rates, higher incidence of low paying or unpaid work, and large shares who are neither working nor in school as compared to adult populations. For youth in low income countries unemployment is more concentrated in urban areas and among those who are more educated and come from higher income households. In lot of countries a large share of young girls are found outside the labor market, some engaged in home production. Among the employed, youth are disproportionately found in unpaid work particularly in poor households.

Cross country estimates show that changes in the youth relative cohort size is unlikely to have a large effect on how youth are faring in the labor market. The richness of the data allows for different desegregations, yet estimates are not measured very precisely. Controlling for country specific effect further reduce the estimates precisions. In general, changes in the demand conditions, as measured by the adult unemployment rate, have a strong effect on youth unemployment and employment rates. The most affected are the low skilled and low income youth. More empirical research is needed to shed further lights on the determinants of youth transition and to help guide policies to facilitate youth transition to work.

Appendix Table I							
		Unemployment	Employment	Not in labor force	Enrollment	Idleness	Jobless
Young	developed cc	16.0	36.0	56.0	50.0	3.0	14.0
	developing c	14.0	36.0	54.0	39.0	16.0	27.0
Adult	developed cc	7.0	80.0	13.0	2.0	11.0	17.0
	developing c	6.0	71.0	23.0	2.0	18.0	25.0
		Unemployment	Employment	Not in labor force	Enrollment	Idleness	Jobless
Male	developed cc	16.0	38.0	52.0	48.0	2.0	13.0
	developing c	15.0	43.0	47.0	41.0	8.0	21.0
Female	developed cc	15.0	34.0	62.0	51.0	5.0	16.0
	developing c	15.0	29.0	63.0	37.0	23.0	34.0
		Unemployment	Employment	Not in labor force	Enrollment	Idleness	Jobless
Urban	developed cc	14.0	35.0	57.0	51.0	4.0	15.0
	developing c	21.0	30.0	59.0	45.0	17.0	29.0
Rural	developed cc	18.0	37.0	54.0	51.0	5.0	15.0
	developing c	10.0	44.0	49.0	30.0	17.0	26.0
UNEMPLOYMENT							
		Young	Adult	Female	Male	Urban	Rural
EAP		11.0	3.0	10.0	13.0	16.0	11.0
ECA		21.0	11.0	21.0	22.0	22.0	23.0
HIC		14.0	7.0	14.0	13.0	14.0	17.0
LAC		18.0	7.0	22.0	15.0	19.0	11.0
MENA		24.0	5.0	26.0	22.0	35.0	20.0
OHIC		25.0	7.0	26.0	25.0	20.0	21.0
SA		7.0	2.0	12.0	6.0	13.0	5.0
SSA		8.0	3.0	6.0	10.0	23.0	4.0
EMPLOYMENT							
		Young	Adult	Female	Male	Urban	Rural
EAP		39.0	73.0	30.0	48.0	37.0	47.0
ECA		30.0	75.0	28.0	33.0	28.0	32.0
HIC		37.0	80.0	36.0	39.0	37.0	37.0
LAC		41.0	71.0	28.0	56.0	39.0	47.0
MENA		22.0	48.0	14.0	32.0	20.0	26.0
OHIC		27.0	81.0	26.0	29.0	26.0	31.0
SA		40.0	63.0	21.0	57.0	29.0	44.0
SSA		40.0	75.0	42.0	43.0	30.0	54.0
NOT IN LABOR FORCE							
		Young	Adult	Female	Male	Urban	Rural
EAP		50.0	24.0	61.0	43.0	53.0	47.0
ECA		61.0	17.0	65.0	58.0	64.0	57.0
HIC		54.0	13.0	57.0	51.0	54.0	53.0
LAC		49.0	24.0	65.0	36.0	53.0	46.0
MENA		66.0	42.0	85.0	55.0	67.0	68.0
OHIC		63.0	13.0	65.0	62.0	67.0	61.0
SA		55.0	32.0	75.0	40.0	63.0	51.0
SSA		52.0	20.0	55.0	51.0	58.0	43.0
ENROLLMENT							
		Young	Adult	Female	Male	Urban	Rural
EAP		38.0	1.0	37.0	37.0	44.0	32.0
ECA		44.0	1.0	45.0	42.0	53.0	39.0
HIC		46.0	2.0	50.0	43.0	50.0	49.0
LAC		44.0	4.0	44.0	44.0	50.0	31.0
MENA		45.0	1.0	44.0	46.0	49.0	42.0
OHIC		61.0	1.0	62.0	61.0	65.0	56.0
SA		25.0	1.0	19.0	30.0	39.0	23.0
SSA		32.0	2.0	29.0	35.0	41.0	28.0
IDLENESS							
		Young	Adult	Female	Male	Urban	Rural
EAP		21.0	23.0	27.0	9.0	13.0	18.0
ECA		7.0	12.0	10.0	7.0	8.0	12.0
HIC		4.0	11.0	6.0	2.0	4.0	4.0
LAC		16.0	22.0	27.0	7.0	13.0	22.0
MENA		9.0	13.0	26.0	3.0	19.0	19.0
OHIC		2.0	12.0	3.0	1.0	2.0	5.0
SA		26.0	16.0	39.0	10.0	22.0	23.0
SSA		19.0	18.0	24.0	14.0	21.0	17.0
JOBLESS							
		Young	Adult	Female	Male	Urban	Rural
EAP		28.0	26.0	32.0	22.0	22.0	23.0
ECA		24.0	21.0	26.0	22.0	22.0	24.0
HIC		15.0	16.0	17.0	14.0	15.0	16.0
LAC		26.0	28.0	35.0	16.0	23.0	31.0
MENA		29.0	29.0	36.0	22.0	32.0	28.0
OHIC		11.0	18.0	12.0	10.0	9.0	13.0
SA		41.0	16.0	57.0	18.0	36.0	38.0
SSA		28.0	20.0	34.0	20.0	32.0	21.0

Appendix Table II						
Young people: total						
	unemployment	employment	not in labor force	enrollment	idleness	jobless
unemployment	1					
	112					
employment	-0.6674*	1				
	112	112				
not in labor force	0.3601*	-0.9293*	1			
	112	112	112			
enrollment	0.2705*	-0.3277*	0.2772*	1		
	98	98	98	99		
idleness	-0.146	-0.2487*	0.3747*	-0.5670*	1	
	112	112	112	99	118	
jobless	0.4620*	-0.5721*	0.4839*	-0.4493*	0.7206*	1
	112	112	112	98	112	112
Young people: males						
	unemployment	employment	not in labor force	enrollment	idleness	jobless
unemployment	1					
	112					
employment	-0.6616*	1				
	112	112				
not in labor force	0.3413*	-0.9251*	1			
	112	112	112			
enrollment	0.1806	-0.3465*	0.3444*	1		
	98	98	98	99		
idleness	-0.0957	-0.2707*	0.3835*	-0.4043*	1	
	112	112	112	99	117	
jobless	0.6065*	-0.5949*	0.4429*	-0.3239*	0.6332*	1
	112	112	112	98	112	112
Young people: females						
	unemployment	employment	not in labor force	enrollment	idleness	jobless
unemployment	1					
	112					
employment	-0.6215*	1				
	112	112				
not in labor force	0.3546*	-0.9459*	1			
	112	112	112			
enrollment	0.3259*	-0.2939*	0.2118*	1		
	98	98	98	99		
idleness	-0.112	-0.3657*	0.4875*	-0.5910*	1	
	112	112	112	99	117	
jobless	0.3519*	-0.6043*	0.5800*	-0.4900*	0.8181*	1
	112	112	112	98	112	112
Young people: urban						
	unemployment	employment	not in labor force	enrollment	idleness	jobless
unemployment	1					
	94					
employment	-0.5784*	1				
	94	94				
not in labor force	0.2015	-0.9085*	1			
	94	94	94			
enrollment	0.0826	-0.2007	0.1927	1		
	81	81	81	82		
idleness	-0.1159	-0.2726*	0.3955*	-0.5940*	1	
	94	94	94	82	99	
jobless	0.4903*	-0.5084*	0.3615*	-0.5776*	0.6712*	1
	94	94	94	81	94	94
Young people: rural						
	unemployment	employment	not in labor force	enrollment	idleness	jobless
unemployment	1					
	93					
employment	-0.7000*	1				
	93	93				
not in labor force	0.4508*	-0.9463*	1			
	93	93	93			
enrollment	0.3152*	-0.4057*	0.3859*	1		
	80	80	80	81		
idleness	-0.1236	-0.2604*	0.3679*	-0.4509*	1	
	93	93	93	81	98	
jobless	0.4704*	-0.6118*	0.5397*	-0.3130*	0.7368*	1
	93	93	93	80	93	93
Note: * correlation significant at the 5% level.						

Appendix Table III

Dependent variable	Sub-group	REGRESSIONS IN LEVELS										TOTAL SAMPLE										REGRESSIONS IN CHANGES										SUBSAMPLE OF 45 COUNTRIES									
		REGRESSIONS IN LEVELS			TOTAL SAMPLE			REGRESSIONS IN CHANGES			SUBSAMPLE OF 45 COUNTRIES			REGRESSIONS IN LEVELS			TOTAL SAMPLE			REGRESSIONS IN CHANGES			SUBSAMPLE OF 45 COUNTRIES																		
		rpst	luA t	Constant	Obs	R2	cpst	cuAt	Constant	Obs	R2	rpst	luA t	Constant	Obs	R2	rpst	luA t	Constant	Obs	R2	rpst	luA t	Constant	Obs	R2															
Unemployment	total sample	luY t	-0.16	-0.88	0.86	19.70	0.40	2.26	93	0.82	cluy t	0.32	0.83	0.20	1.67	0.14	1.26	45	0.08	luY t	-0.49	-1.84	0.76	11.60	0.00	-0.01	45	0.79													
	male	luY m	-0.19	-1.04	0.80	18.30	0.18	1.04	93	0.80	cluy m	0.30	0.70	0.20	1.49	0.16	1.26	45	0.06	luY m	-0.59	-1.95	0.70	9.41	-0.29	-0.96	45	0.72													
	female	luY f	-0.11	-0.45	0.99	16.70	0.77	3.25	93	0.76	cluy f	0.37	0.77	0.24	1.62	0.15	1.06	45	0.07	luY f	-0.38	-1.23	0.82	10.60	0.29	0.92	45	0.75													
	rural	luY r	-0.64	-1.60	0.98	10.50	0.09	0.24	78	0.62	cluy r	0.47	0.80	0.31	1.74	0.06	0.32	38	0.10	luY r	-1.10	-2.07	0.92	6.88	-0.30	-0.55	41	0.61													
	urban	luY u	0.41	1.83	0.51	10.00	0.07	0.31	80	0.57	cluy u	0.12	0.26	0.12	0.83	0.13	0.82	39	0.02	luY u	0.06	0.19	0.44	5.45	-0.33	-0.99	42	0.44													
	no education	luY e1	-0.75	-1.35	1.17	9.98	0.61	1.28	70	0.62	cluy e1	0.44	0.64	0.21	1.57	0.17	1.34	27	0.59	luY e1	-1.77	-2.70	0.92	7.05	-0.64	-1.15	35	0.67													
	primary incomplete	luY e2	-0.82	-2.75	0.90	13.90	0.09	0.36	68	0.77	cluy e2	-0.24	-0.26	1.16	0.66	-0.06	-0.53	32	0.68	luY e2	-1.29	-2.96	0.79	8.02	-0.58	-1.50	33	0.72													
	primary complete	luY e3	-0.15	-0.55	0.89	13.10	0.49	1.86	81	0.70	cluy e3	0.25	0.61	0.93	3.33	-0.05	-0.51	38	0.46	luY e3	-0.39	-1.02	0.86	9.46	0.25	0.69	42	0.71													
	secondary incomplete	luY e4	0.03	0.12	0.67	12.80	0.19	0.92	78	0.69	cluy e4	0.31	1.27	0.94	5.67	-0.04	-0.52	37	0.58	luY e4	0.14	0.39	0.64	7.14	0.12	0.39	39	0.59													
	secondary complete	luY e5	0.46	1.72	0.51	8.09	0.14	0.55	85	0.45	cluy e5	0.34	0.85	0.35	2.80	-0.05	-0.40	41	0.19	luY e5	0.24	0.62	0.44	4.62	-0.23	-0.59	44	0.34													
	more than secondary	luY e6	0.49	1.71	0.29	4.19	-0.53	-1.99	82	0.20	cluy e6	0.45	1.29	0.83	4.18	-0.04	-0.31	40	0.35	luY e6	-0.04	-0.09	0.20	2.08	-0.05	-0.20	44	0.10													
	first quintile	luY q1	-1.80	-3.44	1.15	11.20	0.29	0.66	67	0.73	cluy q1	0.60	1.25	1.13	3.94	-0.07	-0.39	28	0.41	luY q1	-1.77	-3.81	0.99	8.58	-0.13	-0.28	32	0.78													
	second quintile	luY q2	-0.77	-1.93	0.98	11.00	0.33	0.88	53	0.73	cluy q2	0.54	1.14	0.97	3.42	-0.01	-0.08	28	0.35	luY q2	-0.99	-2.31	0.85	8.04	-0.11	-0.25	32	0.73													
	third quintile	luY q3	-0.41	-1.01	1.00	11.10	0.51	1.34	52	0.73	cluy q3	0.27	0.59	1.04	3.81	-1.08	-1.08	26	0.40	luY q3	-0.82	-1.75	0.82	6.98	-0.19	-0.40	31	0.68													
	fourth quintile	luY q4	0.19	0.45	0.81	9.03	0.28	0.74	53	0.62	cluy q4	0.16	0.27	1.17	3.38	-0.02	-0.11	26	0.34	luY q4	-0.46	-1.07	0.64	5.90	-0.50	-1.12	31	0.59													
fifth quintile	luY q5	0.59	1.55	0.57	6.81	-0.19	-0.55	53	0.48	cluy q5	0.61	1.20	0.74	2.04	0.09	0.40	26	0.20	luY q5	-0.04	-0.10	0.34	3.01	-0.12	-0.26	31	0.25														
Employment	total sample	leY t	0.05	0.33	-0.22	-6.08	-1.66	-11.60	93	0.30	cleY t	0.14	0.76	-0.05	-0.83	-0.01	-0.11	46	0.03	leY t	0.20	0.92	-0.27	-5.10	-1.65	-7.65	45	0.42													
	male	leY m	0.13	0.88	-0.18	-5.21	-1.38	-9.81	93	0.25	cleY m	0.20	1.23	-0.04	-0.81	-0.01	-0.13	46	0.05	leY m	0.25	1.12	-0.27	-4.88	-1.45	-6.49	45	0.41													
	female	leY f	-0.10	-0.46	-0.25	-5.04	-2.03	-10.40	93	0.22	cleY f	0.09	0.32	-0.07	-0.82	-0.01	-0.09	46	0.02	leY f	0.16	0.49	-0.23	-2.86	-1.80	-5.50	45	0.19													
	rural	leY r	0.08	0.41	-0.24	-5.54	-1.61	-9.14	79	0.30	cleY r	0.07	0.32	-0.08	-1.29	0.04	0.88	39	0.05	leY r	0.36	1.32	-0.30	-4.30	-1.58	-5.62	41	0.38													
	urban	leY u	-0.29	-1.47	-0.09	-2.00	-1.63	-9.17	80	0.07	cleY u	0.44	1.95	-0.02	-0.29	0.00	-0.01	40	0.09	leY u	-0.07	-0.29	-0.19	-3.26	-1.71	-7.50	42	0.22													
	no education	leY e1	1.33	4.60	-0.22	-3.51	-1.07	-4.43	73	0.33	cleY e1	0.36	0.44	0.00	-0.02	-0.07	-0.58	35	0.01	leY e1	0.80	1.96	-0.33	-3.50	-1.53	-4.10	37	0.34													
	primary incomplete	leY e2	0.39	1.09	-0.31	-3.74	-1.78	-5.42	75	0.19	cleY e2	0.13	0.50	-1.18	-2.41	-0.05	-1.16	36	0.17	leY e2	-0.01	-0.03	-0.30	-3.83	-1.71	-5.45	38	0.40													
	primary complete	leY e3	0.89	2.36	-0.23	-2.61	-1.42	-4.13	82	0.15	cleY e3	-0.08	0.32	-0.27	-1.88	0.11	1.24	39	0.09	leY e3	0.00	0.00	-0.35	-3.22	-1.96	-4.48	41	0.22													
	secondary incomplete	leY e4	0.42	1.36	-0.13	-1.73	-1.77	-6.09	78	0.07	cleY e4	0.24	1.05	-0.21	-1.61	-0.07	-0.88	37	0.09	leY e4	-0.08	-0.19	-0.22	-2.14	-2.03	-4.38	39	0.11													
	secondary complete	leY e5	-0.40	-1.57	-0.10	-1.70	-1.64	-6.82	87	0.05	cleY e5	0.37	1.35	-0.20	-2.28	0.06	0.71	43	0.15	leY e5	-0.43	-1.40	-0.13	-1.75	-1.57	-5.10	44	0.09													
	more than secondary	leY e6	-0.72	-2.18	-0.02	-2.25	-1.62	-5.14	85	0.06	cleY e6	0.08	0.34	0.00	0.03	0.04	0.51	39	0.00	leY e6	-0.31	-0.72	0.00	0.02	-1.22	-2.81	44	0.21													
	first quintile	leY q1	0.71	2.20	-0.20	-3.84	-1.42	-5.20	55	0.28	cleY q1	0.30	-0.83	-0.01	-0.03	-0.02	-0.17	29	0.03	leY q1	0.58	1.86	-0.30	-3.88	-1.46	-4.59	32	0.43													
	second quintile	leY q2	0.15	0.59	-0.21	-4.21	-1.50	-7.06	54	0.27	cleY q2	-0.21	-0.70	0.01	-0.08	-0.05	-0.45	29	0.02	leY q2	0.44	1.77	-0.22	-3.60	-1.29	-5.03	32	0.40													
	third quintile	leY q3	-0.13	-0.50	-0.24	-4.09	-1.71	-6.99	52	0.25	cleY q3	0.13	0.60	-0.18	-1.41	0.09	1.17	26	0.09	leY q3	0.36	1.53	-0.22	-3.65	-1.28	-5.24	31	0.40													
	fourth quintile	leY q4	-0.16	-0.62	-0.22	-3.80	-1.70	-7.19	53	0.22	cleY q4	0.32	1.39	-0.13	-0.95	0.03	0.38	26	0.10	leY q4	0.30	1.17	-0.17	-2.74	-1.22	-4.62	31	0.27													
fifth quintile	leY q5	-0.31	-1.12	-0.16	-2.80	-1.65	-6.68	53	0.13	cleY q5	0.46	1.75	-0.08	-0.50	0.02	0.21	26	0.12	leY q5	0.28	0.93	-0.11	-1.45	-1.09	-3.55	31	0.12														
Employment corrected	total sample	lecY t	-0.25	-2.04	-0.14	-4.86	-1.09	-9.60	93	0.22	clecY t	0.20	0.87	0.05	0.73	-0.01	-0.16	46	0.03	lecY t	-0.23	-1.25	-0.17	-3.78	-1.11	-6.04	45	0.26													
	male	lecY m	-0.08	-0.77	-0.13	-5.19	-0.83	-8.60	93	0.23	clecY m	0.30	1.46	0.04	0.67	0.01	-0.20	46	0.06	lecY m	-0.11	-0.79	-0.17	-4.91	-0.89	-6.32	45	0.37													
	female	lecY f	-0.46	-2.42	-0.14	-3.21	-1.41	-7.83	93	0.14	clecY f	0.12	0.36	0.04	-0.41	-0.04	-0.49	46	0.01	lecY f	-0.33	-0.97	-0.12	-1.48	-1.25	-3.69	45	0.06													
	rural	lecY r	-0.14	-0.62	-0.15	-4.76	-1.04	-7.96	79	0.23	clecY r	0.08	0.34	0.00	0.03	0.04	0.51	39	0.00	lecY r	-0.10	-0.50	-0.18	-3.66	-1.08	-5.26	41	0.26													
	urban	lecY u	-0.47	-3.04	-0.06	-1.88	-1.07	-7.45	80	0.12	clecY u	0.58	2.16	0.07	0.88	0.07	0.11	40	0.13	lecY u	-0.41	-1.95	-0.13	-3.20	-1.14	-5.34	42	0.17													
	no education	lecY e1	0.97	3.02	-0.17	-2.47	-0.97	-3.63	73	0.18	clecY e1	0.19	-0.23	0.14	0.71	-0.29	-2.30	35	0.02	lecY e1	0.73	1.63	-0.31	-3.05	-1.45	-3.55	37	0.28													
	primary incomplete	lecY e2	2.00	1.07	-0.23	-5.19	-1.22	-7.07	75	0.30	clecY e2	-0.08	-0.15	-1.95	-0.07	-1.64	36	0.12	lecY e2	0.21	0.88	-0.25	-4.43	-1.19	-5.48	38	0.38														
	primary complete	lecY e3	-0.07	-0.46	-0.15	-4.48	-1.09	-8.05	82	0.20	clecY e3	0.12	0.47	-0.17	-1.18	0.08	0.95	39	0.04	lecY e3	-0.12	-0.52	-0.21	-3.95	-1.12	-5.74	41	0.29													
	secondary incomplete	lecY e4	-0.05	-0.31	-0.13	-3.44	-1.05	-6.95	78	0.14	clecY e4	0.38	2.82	-0.13	-1.68	-0.04	-0.86	37	0.23	lecY e4	-0.20	-1.00	-0.21	-3.44	-1.16	-5.80	39	0.25													
	secondary complete	lecY e5	-0.29	-1.44	-0.07	-1.89	-0.98	-6.84	87	0.07	clecY e5	0.56	2.67	-0.12	-1.89	0.06	0.90	43	0.21	lecY e5	-0.42	-2.03	-0.14	-2.73	-1.16	-5.65	44	0.18													
	more than secondary	lecY e6	-0.20	-1.17	-0.07	-1.68	-1.07	-7.45	85	0.04	clecY e6	0.32	1.16	-0.05	-0.8																										

Appendix Table IV: List of Surveys used in the Sample

ccode	Country name	year	Survey Name
AFG	Afghanistan	2003	National Risk and Vulnerability Assessment 2003
AGO	Angola	1999	Inquerito aos Agregados Familiares sobre Despesas e Receitas 1999-2000
ALB	Albania	2002	Living Standard Measurement Survey 2002
ARG	Argentina	1994	Encuesta Permanente de Hogares 1994
ARG	Argentina	2001	Encuesta Permanente de Hogares 2001
ARM	Armenia	1999	Integrated Survey of Living Standards 1999
ARM	Armenia	2003	Integrated Survey of Living Standards 2003
AUS	Australia	1989	Survey of Income and Housing Costs (SIHC)
AUS	Australia	1994	Survey of Income and Housing Costs (SIHC)
AUT	Austria	1994	Austrian Microcensus
AUT	Austria	2000	Austrian Microcensus
AZE	Azerbaijan	1995	State Statistical Survey 1995
AZE	Azerbaijan	2002	State Statistical Survey 2002
BDI	Burundi	1998	Enquete Prioritaire 1998
BEL	Belgium	1992	Socio-Economic Panel (SEP)
BEL	Belgium	2000	Panel Study of Belgian Households (PSBH) / BE ECHP
BEN	Benin	2003	Indicateurs de Base du Bien-etre
BFA	Burkina Faso	1994	Enquete Prioritaire 1994
BFA	Burkina Faso	2003	Indicateurs de Base du Bien-etre
BGD	Bangladesh	1991	Household Income-Expenditure Survey 1991
BGD	Bangladesh	2000	Household Income-Expenditure Survey 2000
BGR	Bulgaria	1995	Integrated Household Survey 1995
BIH	Bosnia and Herzegovina	2001	Living Standard Measurement Survey 2001
BLR	Belarus	1998	Income and Expenditure Survey 1998
BLR	Belarus	2002	Income and Expenditure Survey 2002
BOL	Bolivia	1993	Encuesta Integrada de Hogares 1993
BOL	Bolivia	2002	Encuesta Continua de Hogares - Condiciones de Vida 2002
BRA	Brazil	1995	Pesquisa Nacional per Amostra de Domicilios 1995
BRA	Brazil	2001	Pesquisa Nacional per Amostra de Domicilios 2001
BTN	Bhutan	2003	Bhutan Living Standards Survey 2003
CAN	Canada	1991	Survey of Consumer Finances (SCF)
CAN	Canada	2000	Survey of Labour and Income Dynamics (SLID)
CHE	Switzerland	1992	Income Distribution Survey (HINK)
CHE	Switzerland	2000	Income Distribution Survey (HINK)
CHL	Chile	1990	Encuesta de Caracterizacion Socioeconomica Nacional 1990
CHL	Chile	1996	Encuesta de Caracterizacion Socioeconomica Nacional 1996
CHL	Chile	2003	Encuesta de Caracterizacion Socioeconomica Nacional 2003
CIV	Côte d'Ivoire	2002	Enquete Niveau de Vie des Menages 2002
CMR	Cameroon	1996	Enquete sur les Niveau de Vie 1995
CMR	Cameroon	2001	Deuxieme Enquete Camerounaise aupres des Menages 2001
COL	Colombia	1995	Encuesta Nacional de Hogares - Fuerza de Trabajo 1995
COL	Colombia	2000	Encuesta Nacional de Hogares - Fuerza de Trabajo 2000
CPV	Cape Verde	2000	Recesamento Geral da Populacao e Habitaco 2000
CRI	Costa Rica	1995	Encuesta de Hogares de Propositos Multiples 1995
CRI	Costa Rica	2001	Encuesta de Hogares de Propositos Multiples 2001
DEU	Germany	1994	German Social Economic Panel Study (GSOEP)
DEU	Germany	2000	German Social Economic Panel Study (GSOEP)

DJI	Djibouti	1996	Enquete Djiboutienne aupres de Menages 1996
DNK	Denmark	1987	Income Tax Register
DNK	Denmark	1992	Income Tax Register
DOM	Dominican Republic	1997	Encuesta Nacional de Fuerza de Trabajo 1997
DOM	Dominican Republic	2004	Encuesta Nacional de Fuerza de Trabajo 2004
ECU	Ecuador	1995	Encuesta Periodica de Empleo y Desempleo 1995
ECU	Ecuador	2004	Encuesta Periodica de Empleo, Desempleo y Subempleo 2004
EGY	Egypt, Arab Rep.	1998	Egypt Labor Market Survey 1998
ESP	Spain	1995	Spanish European Community Household Panel / ES ECHP
ESP	Spain	2000	Spanish European Community Household Panel / ES ECHP
EST	Estonia	2000	Household Budget Survey 2000
ETH	Ethiopia	1995	Welfare Monitoring Survey 1995
ETH	Ethiopia	2000	Welfare Monitoring Survey 2000
FIN	Finland	1991	Income Distribution Survey (IDS)
FIN	Finland	2000	Income Distribution Survey (IDS)
FJI	Fiji	1996	1996 Population Census
FRA	France	1989	Household Budget Survey
FRA	France	1994	Household Budget Survey
FSM	Micronesia, Fed. Sts.	2000	2000 Census of Population and Housing
GBR	United Kingdom	1994	Family Resources Survey (FRS)
GBR	United Kingdom	1999	Family Resources Survey (FRS)
GEO	Georgia	1998	Survey of Georgian Households
GEO	Georgia	2002	National Survey of Households 2002
GHA	Ghana	1991	Ghana Living Standards Survey 3
GHA	Ghana	1998	Ghana Living Standards Survey 4
GIN	Guinea	1994	Enquete Integrale sur les Conditions de Vie des Menages
GMB	Gambia, The	1998	1998 Household Poverty Survey
GTM	Guatemala	1989	Encuesta Nacional Socio Demografica
GTM	Guatemala	2002	Encuesta Nacional sobre Condiciones de Vida (ENCOVI)
GUY	Guyana	1992	Living Standards Measurement Survey
GUY	Guyana	2000	Multiple Indicators Cluster Survey
HND	Honduras	1995	Encuesta Permanente de Hogares de Propositos Multiples
HND	Honduras	2003	Encuesta Permanente de Hogares de Propositos Multiples
HRV	Croatia	2004	Household Budget Survey
HTI	Haiti	2001	Enquete sur les Conditions de Vie en Haiti
HUN	Hungary	1998	Household Monitor Survey
HUN	Hungary	2000	Household Monitor Survey
HUN	Hungary	2002	Household Monitor Survey
IDN	Indonesia	1993	National Socioeconomic Survey (SUSENAS)
IDN	Indonesia	2002	National Socioeconomic Survey (SUSENAS)
IND	India	1994	National Sample Survey
IND	India	2000	National Sample Survey
IRL	Ireland	1992	Living in Ireland Survey / IE ECHP
IRL	Ireland	1994	Living in Ireland Survey / IE ECHP
IRL	Ireland	2000	Living in Ireland Survey / IE ECHP
IRL	Ireland	2001	Living in Ireland Survey / IE ECHP
ITA	Italy	1991	Survey on Household Income and Wealth (SHIW)
ITA	Italy	2000	Survey on Household Income and Wealth (SHIW)
JAM	Jamaica	1996	Jamaica Survey of Living Conditions
JAM	Jamaica	2002	Jamaica Survey of Living Conditions
JOR	Jordan	2002	Household Income and Expenditure Survey
KAZ	Kazakhstan	2002	Household Budget Survey

KEN	Kenya	1997	Welfare Monitoring Survey III
KGZ	Kyrgyz Republic	1996	Household Budget Survey
KGZ	Kyrgyz Republic	2002	Household Budget Survey
KHM	Cambodia	1997	Cambodia Socio Economic Survey 1997
KHM	Cambodia	2004	Household Socio Economic Survey 2003-2004
KIR	Kiribati	2000	Population and Housing Census
LKA	Sri Lanka	1995	Household Income and Expenditure Survey
LKA	Sri Lanka	2002	Household Income and Expenditure Survey
LSO	Lesotho	2002	Welfare Indicators Survey
LTU	Lithuania	2000	Household Budget Survey
LUX	Luxembourg	1991	Socio Economic Panel (PSELL)
LUX	Luxembourg	2000	Socio Economic Panel (PSELL)
LVA	Latvia	2004	Household Budget Survey
MDA	Moldova	1998	Household Budget Survey
MDA	Moldova	2002	Household Budget Survey
MDG	Madagascar	1993	Enquete Permanante aupres des Menages
MDG	Madagascar	2001	Enquete Prioritaire aupres des Menages
MDV	Maldives	1998	Household Income and Expenditure Survey
MDV	Maldives	2002	Household Income and Expenditure Survey
MEX	Mexico	1994	Encuesta Nacional de Empleo
MEX	Mexico	2002	Encuesta Nacional de Empleo
MHL	Marshall Islands	1999	Census of Population and Housing
MOZ	Mozambique	1996	Inquerito Nacional aos Agregados
MRT	Mauritania	2000	Enquete Permanantes sur les Conditions de Vie des Menages
MWI	Malawi	1997	Integrated Household Survey
NAM	Namibia	1993	Household Income and Expenditure Survey
NER	Niger	2002	Enquete Emploi
NGA	Nigeria	2003	Nigeria Living Standards Survey
NIC	Nicaragua	1993	Encuesta Nacional de Hogares sobre Medicion de Nivel de Vida (EMNV)
NIC	Nicaragua	2001	Encuesta Nacional de Hogares sobre Medicion de Nivel de Vida (EMNV)
NLD	Netherlands	1994	Socio-Economic Panel (SEP)
NLD	Netherlands	1999	Socio-Economic Panel (SEP)
NOR	Norway	1995	Income Distribution Survey (IF)
NOR	Norway	2000	Income Distribution Survey (IF)
NPL	Nepal	1995	Nepal Living Standards Survey
PAK	Pakistan	1999	Household Income and Expenditure Survey
PAK	Pakistan	2001	Household Income and Expenditure Survey
PAN	Panama	1991	Encuesta de Hogares
PAN	Panama	1995	Encuesta de Hogares
PAN	Panama	2003	Encuesta de Hogares
PER	Peru	1994	Encuesta Nacional de Hogares
PER	Peru	2002	Encuesta Nacional de Hogares
PLW	Palau	2000	Census of Population and Housing
POL	Poland	1998	Household Budget Survey
POL	Poland	2002	Household Budget Survey
PRY	Paraguay	1995	Encuesta de Hogares
PRY	Paraguay	2001	Encuesta de Hogares
ROM	Romania	1994	Romanian Integrated Household Survey (RIHS)
ROM	Romania	2002	Romanian Integrated Household Survey (RIHS)
RUS	Russian Federation	1997	Russia Longitudinal Monitoring Survey (RLMS)

RUS	Russian Federation	2002	Russia Longitudinal Monitoring Survey (RLMS)
RWA	Rwanda	1997	Enquete Integrale sur les Conditions de Vie des Menages
SEN	Senegal	1995	Enquete sur les Depenses des Menages
SLB	Solomon Islands	1999	Population Census
SLE	Sierra Leone	2003	Sierra Leone Integrated Household Survey
SLV	El Salvador	1995	Encuesta de Hogares de Propositos Multiples
SLV	El Salvador	2002	Encuesta de Hogares de Propositos Multiples
STP	São Tomé and Principe	2000	Enquete sur les Conditions de Vie des Menages
SVK	Slovak Republic	1992	Slovak Microcensus
SVN	Slovenia	1999	Household Budget Survey
SWE	Sweden	1995	Income Distribution Survey (HINK)
SWE	Sweden	2000	Income Distribution Survey (HINK)
SWZ	Swaziland	1995	Household Income and Expenditure Survey
SWZ	Swaziland	2000	Household Income and Expenditure Survey
THA	Thailand	1990	Socio Economic Survey
THA	Thailand	1994	Socio Economic Survey
THA	Thailand	2002	Socio Economic Survey
TJK	Tajikistan	1999	Tajikistan Living Standards Survey
TON	Tonga	1996	National Population Census
TTO	Trinidad and Tobago	1992	Survey of Living Conditions
TUR	Turkey	2002	Household Income and Expenditure Survey
TWN	Taiwan, China	1995	Survey of Family Income and Expenditure
TWN	Taiwan, China	2000	Survey of Family Income and Expenditure
TZA	Tanzania	1991	Household Budget Survey
TZA	Tanzania	2000	Household Budget Survey
UGA	Uganda	2002	National Household Survey
UKR	Ukraine	1999	Household Budget Survey
UKR	Ukraine	2003	Household Budget Survey
URY	Uruguay	1995	Encuesta Continua de Hogares
URY	Uruguay	2003	Encuesta Continua de Hogares
USA	United States	1994	Current Population Survey (CPS)
USA	United States	2000	Current Population Survey (CPS)
VEN	Venezuela, RB	1995	Encuesta de Hogares por Muestreo
VEN	Venezuela, RB	2004	Encuesta de Hogares por Muestreo
VNM	Vietnam	1992	Living Standards Survey
VNM	Vietnam	2001	Household Living Standards Survey
YEM	Yemen, Rep.	1998	Demographic and Health Survey
YUG	Serbia and Montenegro	2005	Household Budget Survey
ZAF	South Africa	1995	Household Survey
ZAF	South Africa	2000	Household Income and Expenditure Survey
ZMB	Zambia	1998	Living Conditions Monitoring Survey
ZMB	Zambia	2002	Living Conditions Monitoring Survey

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