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Youth unemployment in the Middle East and North Africa, and the Moroccan case

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Youth unemployment in the Middle East and North Africa, and the Moroccan case

Uri Dadush

Abstract
Youth unemployment, and unemployment, in the Middle East North Africa (MENA) countries are among the highest in the world. The tendency to generalize, however, is inappropriate as different groups of countries exhibit vastly different labor market outcomes and causes vary. The standard way of thinking about youth unemployment – i.e. demand for labor driven by economic growth and supply driven by demographics – is of limited use in the MENA countries. Other factors, including sectoral composition of growth, the oil and gas endowment, a large pool of underutilized workers, cultural factors, and mismatch appear to play a more important role, as the case study of Morocco illustrates. The prospects for reducing youth unemployment over the next few years are not good. Policy-makers need to pay more attention to the growth of services, especially those that are, and that tend to remain, labor intensive.

(Submitted as Policy Paper)

JEL J23 J48 J61 J71
Keywords Unemployment; youth bulge; labor demand; labor productivity; Middle East; North Africa; oil states

Authors
Uri Dadush, Policy Center for the New South, and Non-Resident Scholar, Bruegel, uri.dadush@bruegel.org

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1 Introduction

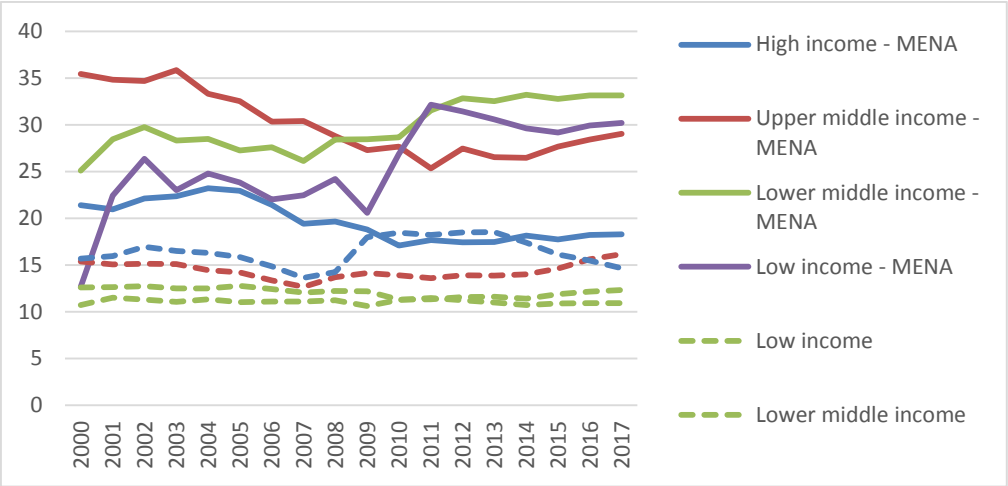
The Middle East and North Africa (MENA) region has some of the highest total and youth unemployment rates in the world. High youth unemployment is especially worrisome because it can have lasting effects on lifetime employability and can be the cause of political instability. Migration pressures can increase as it tends to be the young that emigrate. This paper aims to provide a better understanding of the drivers of youth unemployment in the region by examining some common factors and then delving deeper into the case of Morocco, a relatively stable country that has historically been a source of large emigration, especially towards Europe.

The analysis suggests that, even though MENA countries are often put in one basket as exhibiting high rates of youth unemployment, they face very different problems and exhibit different outcomes. I also argue that even though the rate of growth of the region's young population is likely to moderate over the next few years, it is expected to experience another bulge in the 2020's, and high unemployment, including youth unemployment, is likely to remain a persistent feature in the foreseeable future in several MENA countries. Also evident from this review is that standard analysis of unemployment, which attributes it to low growth, unfavorable demographics, and labor market rigidities, does not go very far in explaining youth unemployment in MENA. Depending on the country, factors that are as important are the stock of underutilized workers, high labor productivity growth in some key sectors, the effect of natural resources, and the influence of cultural factors.

2 A Common Set of Problems?

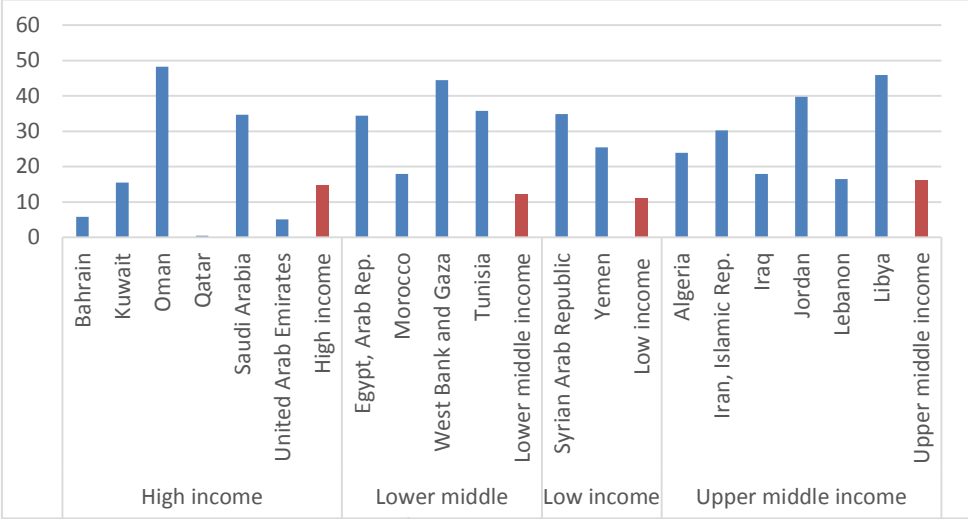
Across the region, the youth unemployment rate is high compared to countries with similar levels of income (Figure 1 and Figure 2).

Figure 1: Youth Unemployment in MENA countries (% of total labor force ages 15–24)



Source: WDI (modeled ILO estimates).

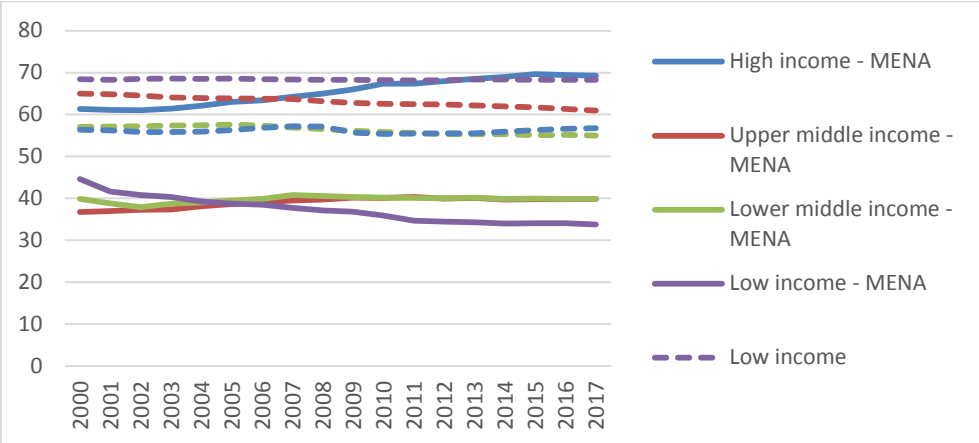
Figure 2: Youth Unemployment in MENA countries (% of total labor force ages 15–24), 2017 or latest year available



Note: red bars represent averages for each income group.

The youth unemployment problem in MENA is part of a more general problem of low labor participation rates and total unemployment. Except the high-income Gulf countries, the total employment ratio in MENA is low compared to countries at similar levels of income, lower by some 15-percentage points. There is also a high variation within the high-income MENA countries with the United Arab Emirates and Qatar having the highest employment to total population ratios while Oman and Saudi Arabia are characterized by the lowest ones. The employment-to-total-population ratio of Oman is lower than the average of lower middle-income countries (Figure 3).

Figure 3: Employment total population ratio: MENA income groups average vs world averages

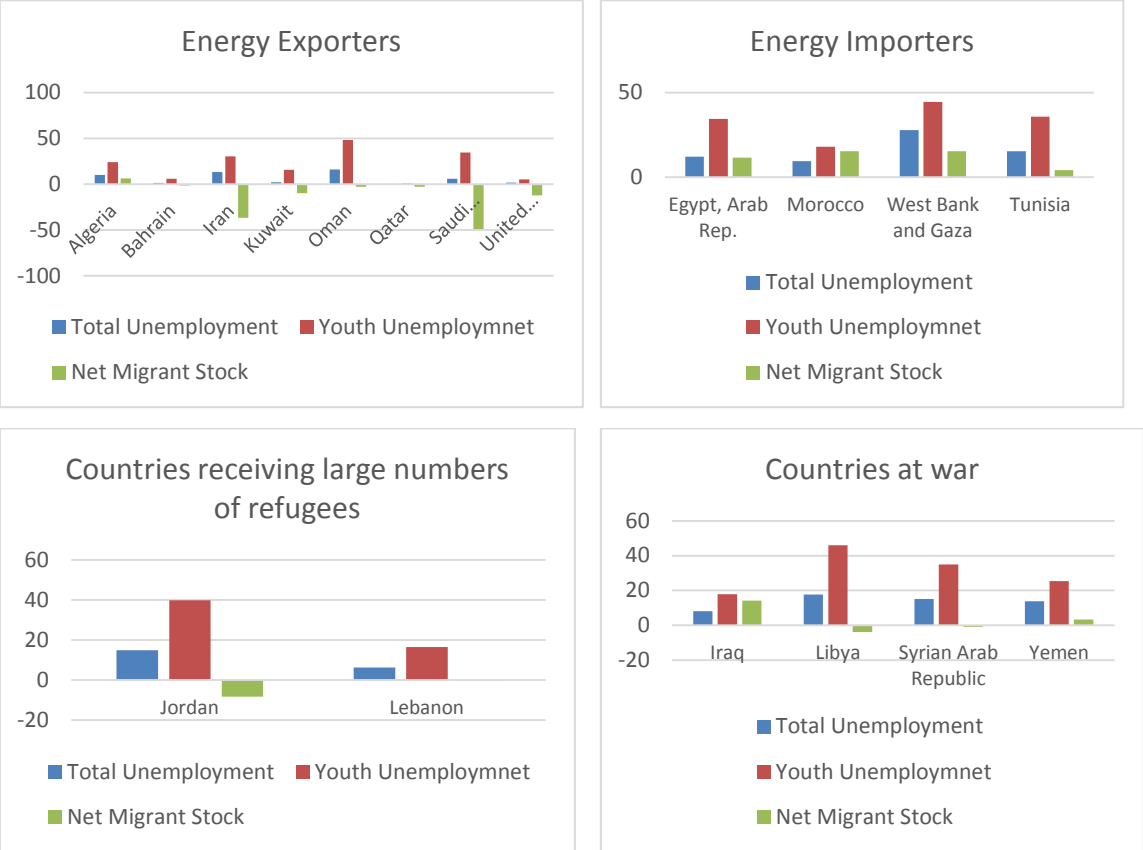


Source: WDI (modeled ILO estimates).

In discussing the youth unemployment problem in MENA, there is a tendency to lump the countries in the region together. However, one cannot always speak of a common set of factors that account for the jobs problem across the Middle East and North Africa (MENA) region. The countries at war – Syria, Yemen, Libya – are, of course, a story of themselves. Some countries not at war, notably Lebanon and Jordan, have seen huge inflows of refugees that have created large downward pressures on wages, especially in the low-skilled informal sector (Dadush & Niebuhr, 2016).

The remaining countries can be divided into two main groups (Figure 4). The energy importers such as Egypt, Morocco, and Tunisia, have been unable to create enough jobs, especially for the young, and are the source of large diasporas. Officially, emigrants are 4–8%[1] of the population

Figure 4: Total unemployment (% of total labor force), youth unemployment (% of total labor force ages 15–24), net migration stock (100000 people) in MENA countries



Sources: WDI (modeled ILO estimates) and UN Population.

Note: total unemployment, youth unemployment and net migration stock are presented for the latest available year (2017). Net migration stock is calculated as a difference between the number of emigrants from specific MENA country and the number of immigrants to specific MENA country.

[1] Most of the data used in this article comes from World Development Indicators, World Bank.

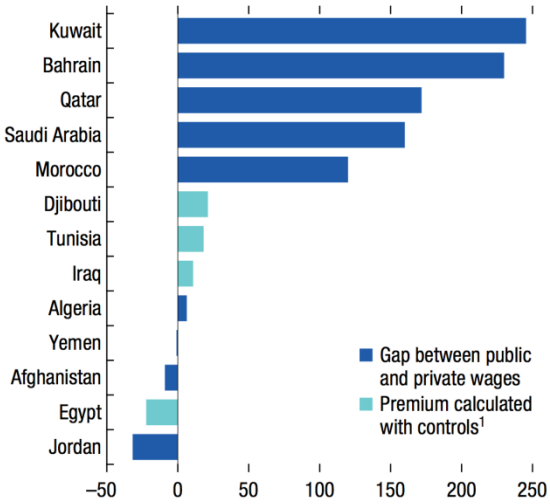
and one can probably double that number if undocumented emigrants and the offspring born abroad are included. In contrast, the energy exporters, such as Saudi Arabia, have generated jobs in excess of their effective labor supply, have little emigration, and attract foreign workers and their families which add up to some 30% to their native population. The United Arab Emirates and Qatar, oil exporters whose native population is much smaller than that of Saudi Arabia, have foreign-born populations that represent as much as 80% of the total.

Despite the need and large inflow of foreign workers, Saudi Arabia (and to a lesser degree, the other Gulf countries) suffers from relatively high unemployment or underemployment among natives and exhibits low labor market participation rates among women and the young. But it is difficult to relate this phenomenon to low demand for labor. Other factors, such as high expectations, high government wages and a preference to work in government (i.e. to wait until a job in government opens up), in addition to views on women may be at play. Skill mismatch, reflecting inadequate education outcomes, may also be a major cause. Among the elites, as well as among the population at large, the possibility of relying on rents and government sinecures may have reduced the incentive to work in the private sector. A recent IMF report shows that there is a large government-private sector wage gap in several MENA countries (Figure 5).

Algeria displays some of the labor market characteristics of energy importers even though it is an energy exporter. In fact, it has relatively modest energy endowments compared to its large population, and has high youth unemployment as well as a large diaspora, in addition to hosting almost no foreign-born workers.

A striking feature, common across the region, is the low participation of women in the labor force (Figure 6). Though a separate analysis of this phenomenon lies beyond the scope of this

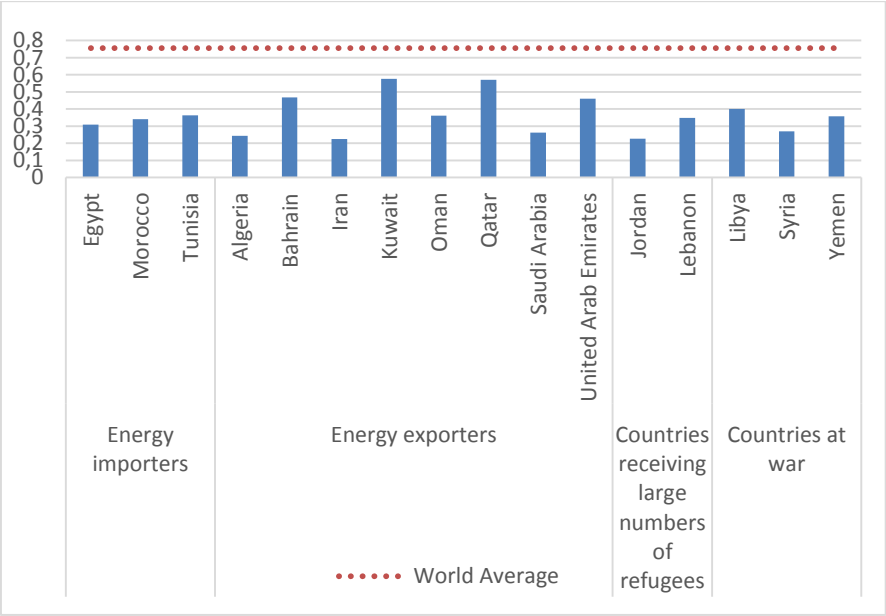
Figure 5: Public Private Sector Wage Gaps in MENA countries



Source: Baduel, B., Castellanos, C., Finger, H., Ongley, K., Pierre, G., Purfield, C., Roos, E., & Stepanyan V. (2018). Opportunity for All: Promoting Growth and Inclusiveness in the Middle East and North Africa. *International Monetary Fund.*

paper, it does underscore the importance of cultural and institutional factors in understanding job market trends in MENA, and difficulties that young women have finding jobs compound the youth unemployment problem in much of the region.

Figure 6: Share of women in labor force (ratio to men) in MENA countries, 2017.



Source: World Economic Forum, the Global Competitiveness Index dataset 2007–2017.

Note: Data on ratios for Libya (2017) and Syria (2017) is presented for the latest available years, 2014 and 2011 respectively.

3 Features Contributing to High Youth Unemployment

Standard analysis looks at youth unemployment in a simple demand/supply framework. The demand for labor, including for young workers, can be proxied by the rate of economic growth on the assumption that there is a fairly stable GDP elasticity of the demand for labor; the supply of young workers can be proxied by the growth of the young population; and an index of labor market flexibility can indicate the ease with which the market for workers, including young workers newcomers to the market, clears. Thus, factors that could account for high youth unemployment include: rigidity of labor markets, low economic growth rates, and rapid growth of the young population.

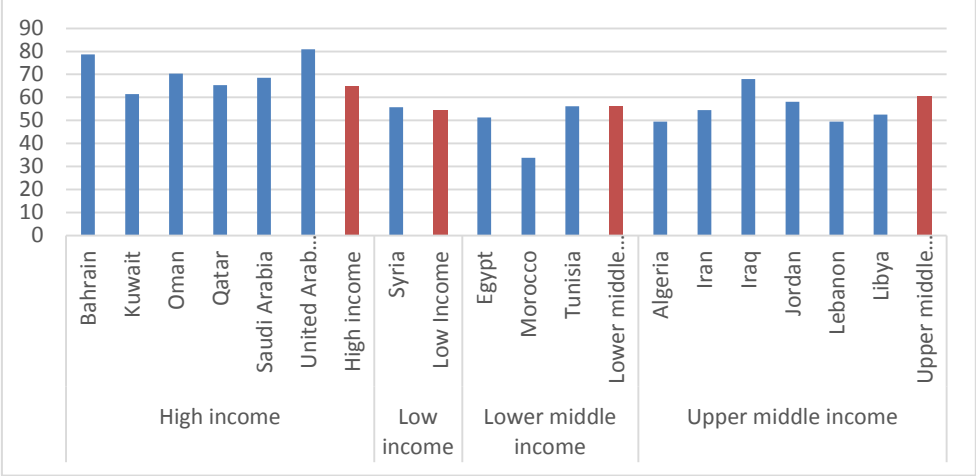
According to the Heritage Foundation Index of Labor Market Freedom[2] (a low score indicates a less free and less flexible labor market), the Gulf countries' labor markets are among the most

[2] Labor Market Freedom is an index of economic freedom published by The Heritage Foundation. It is a quantitative indicator which accounts for various aspects of the legal and regulatory framework of a country's labor market based on data collected in connection with the World Bank's Doing Business. In particular, the index is comprised of the six equally weighted factors:

flexible in their income group, while the MENA's middle income-countries are among the comparatively less flexible, with Algeria and Morocco standing out as especially inflexible (Figure 7). A caveat is in order here, as these statistics are drawn from local laws and regulations, whereas most MENA countries exhibit a high degree of informality, as do many developing countries. Therefore, these statistics help understand the workings of only one part of the labor market (see below), and the labor market in total is almost certainly more flexible than suggested by these statistics.

The MENA countries have also exhibited relatively volatile GDP growth rates over the last 20 years – one indicator of uncertainty that can deter investment and job creation – and have seen a GDP deceleration and slower job creation since the outbreak of the Arab Spring protests in 2011 (Table 1, Figure 8).

Figure 7: Labor Market Freedom in MENA countries



Source: Heritage Foundation.

Note: red bars represent world averages for each income group. Data on Yemen is missing.

- Ratio of minimum wage to the average value added per worker,
- Hindrance to hiring additional workers,
- Rigidity of hours,
- Difficulty of firing redundant employees,
- Legally mandated notice period, and
- Mandatory severance pay.

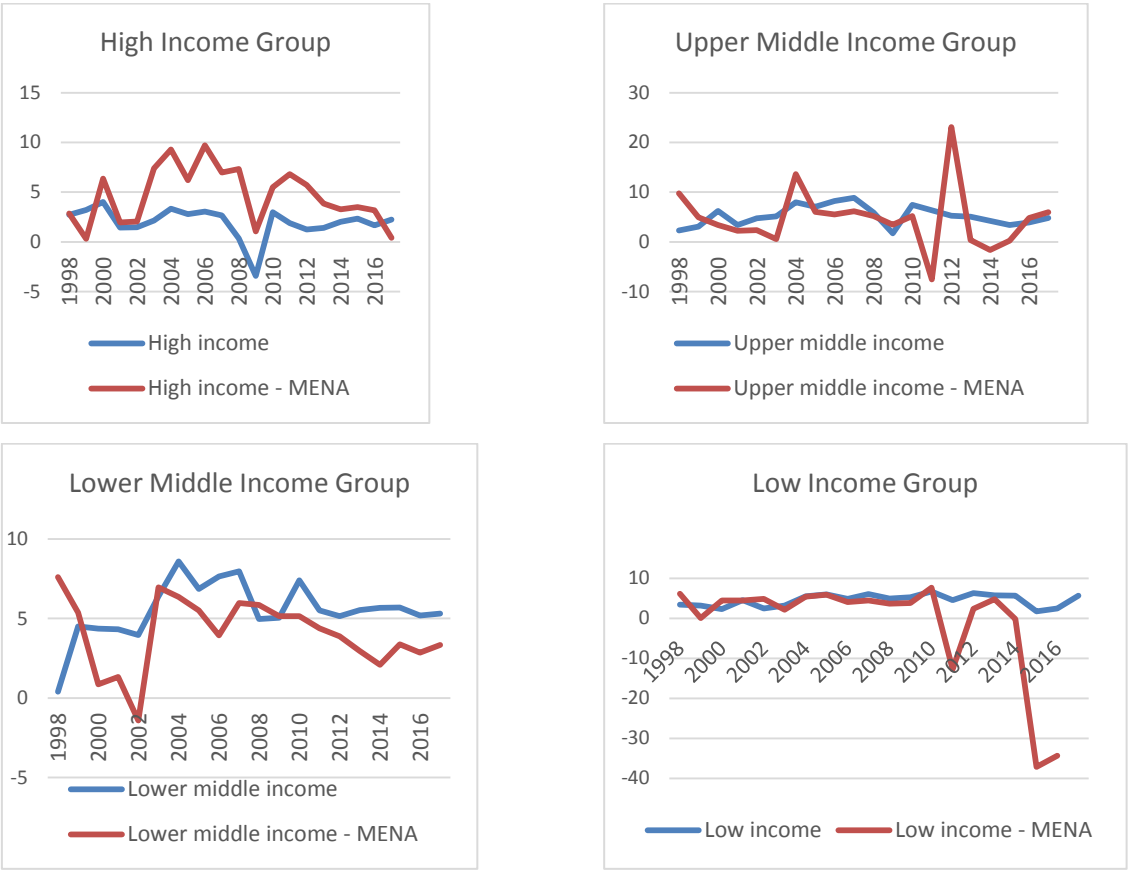
Each factor is subsequently converted to a scale of 0 to 100 in accordance with the following equation for country *I* relative to the world average: $Factor\ Score_i = 50 * factor_{average}/factor_i$. Then the simple average of the converted factors is taken.

Table 1: Growth of GDP (%) before and after the Arab Spring in MENA countries, 2005–2017

	2005–2011	*2011–2017*
High income	1.2	1.8
High income - MENA	4.7	3.1
Low income	5.4	4.6
Low income - MENA	1.3	NA
Lower middle income	6.4	5.4
Lower middle income - MENA	5.1	3.2
Upper middle income	6.3	4.5
Upper middle income - MENA	3.2	3.2
World	2.7	2.8
MENA (excl. Low income)	4.2	3.1

Source: WDI.
Note: data on Syria is missing.

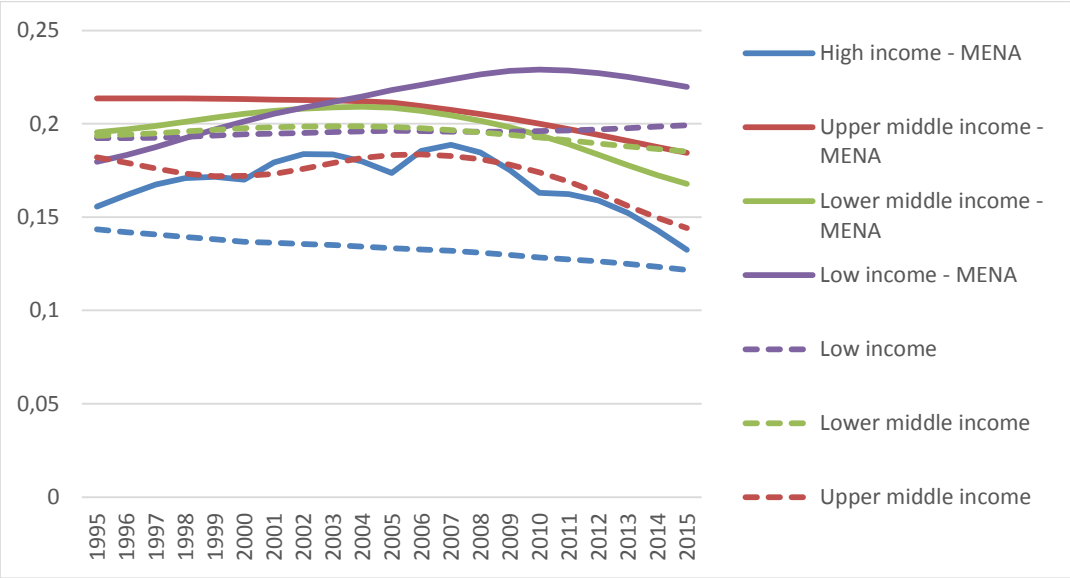
Figure 8: GDP growth in MENA countries, 1998–2017 (annual %)



Source: WDI.

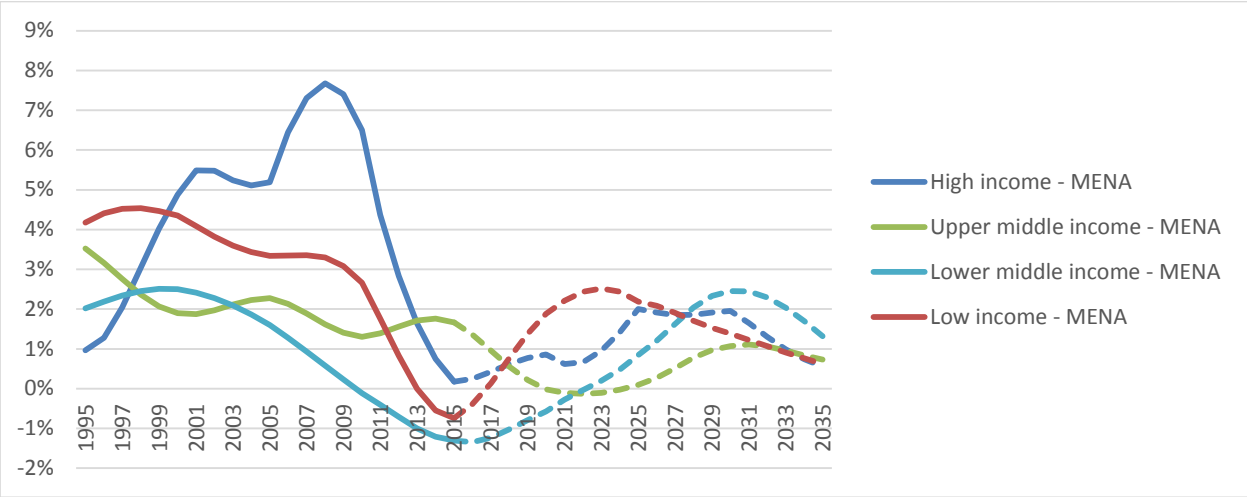
The region's population is relatively young and its young population has grown rapidly over the last 20 years (Figures 9 and 10). Still, similar to other developing and advanced countries, many countries in the MENA region have seen a rapid decline in fertility rates and this will be reflected in a decline in the growth rate of the young population. However, the growth of young population is expected to rise again after 2020 in most MENA countries. This is (presumably) the result of a bulge in the young population reaching child-bearing age (Figure 11).

Figure 9: Share of Youth Population in MENA countries, 1995–2015



Source: UN Population.

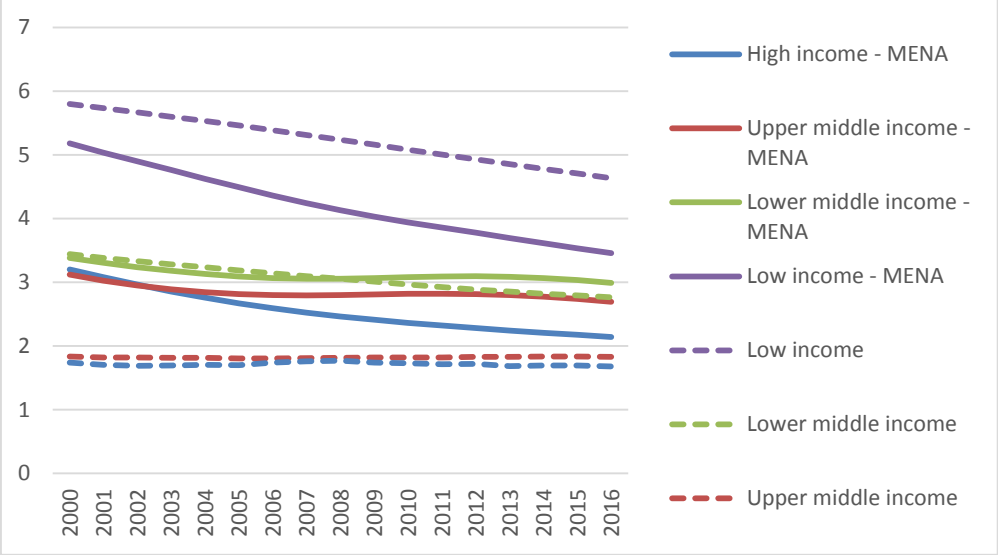
Figure 10: Youth Population Growth in MENA countries, 1995–2035



Source: UN Population.

Note: Youth population growth rate is presented by CAGR (backward looking 5 year average).

Figure 11: Fertility rate in MENA countries (total), 2000–2016.



Source: WDI.

Note: "total fertility rate represents the number of children that would be born to a woman if she were to live to the end of her childbearing years and bear children in accordance with age-specific fertility rates of the specified year."

In light of the many country-specific factors, including institutional and cultural influences, that affect youth unemployment across the world, quantifying the simple demand-supply framework is not straightforward. This is especially the case in developing countries that are characterized by high informality and underemployment, which means that youth unemployment statistics provide only a partial view. A panel regression of youth unemployment on GDP growth, growth of the young population, the market freedom index, and controls for income levels was estimated. Not surprisingly, it works reasonably well for advanced countries, but not for developing countries or for the full sample of advanced and developing countries (see appendix).

Understanding the drivers of youth unemployment in the MENA countries requires more detailed case studies. This paper makes a start by delving deeper into Morocco, a relatively stable country that has grown at a moderate pace, but where youth unemployment remains high and emigration pressures remain strong.

4 The Moroccan case

Morocco presents a particularly interesting case of structural labor market disequilibrium[3]. The main message derived from the Moroccan case study is that the stock of underemployed

[3] See El Ayanoui and Ibourk (2018) for a comprehensive review

workers – in the countryside, in the informal urban sector, and among women – knocking on the doors of the labor market is very large, and it swamps the flow effect of declining numbers of young workers joining the labor market. Moreover, the moderate GDP growth rates seen in Morocco are not enough to absorb these workers, in part because labor productivity is advancing rapidly. In recent years, labor productivity advanced especially rapidly in agriculture, which is by far the largest single source of employment in Morocco, freeing many workers that struggle to find employment in other sectors. Manufacturing employment in Morocco has been declining.[4]

Morocco's GDP grew at around 4.5% a year over 2000–2014, a shade over 3% per capita, a very respectable outcome amid comparators. This resulted in some job creation, but falling way short of the increased labor supply. Official unemployment numbers, which have declined over this period but remain near 10%, provide only a very partial picture of the state of the labor market in Morocco, as they do in many other MENA countries. More generally, official unemployment numbers fail to capture the complexity of job market developments in developing countries that exhibit a high degree of informality, and of underemployment in the countryside, as well as in sectors such as construction and many urban services.

The underlying demographic and employment numbers tell a more complete story. The number of Moroccans employed increased from 10,200,000 to 11,800,000 over 2000 to 2014, or by 115,000 per year. Over this period, the labor force (people of working age 15–65) grew very fast, at 2% a year over 2000 to 2014, or by 383,000 a year on average, and consequently the share of the working age population employed declined from 53% in 2000 to 48% in 2014.[5] Thus, only roughly one-third of the increase of the population of working age sought and found employment. Sharply rising secondary and tertiary school enrollment account for a substantial part of this gap, but even among the population aged 25 and above, the share of employed declined by over 2 percentage points. Many young people emigrated. Without substantial emigration – on which data is at best approximate – Morocco's unemployment problem would have been significantly worse. According to the OECD, over 2000 to 2014, emigration from Morocco to OECD countries was on average about 100,000 per year[6] (about 0.3% of the population each year), including people of all ages.

However, demographic changes are only one part of the supply of labor story in Morocco. Arguably more important is the large stock of underutilized labor in the countryside and among the female population. Over 35% of the Moroccan labor force is employed in agriculture and almost 42% of this labor force is engaged in unpaid work ("*non rémunéré*"), suggesting very low productivity. The adoption of modern agricultural techniques, i.e. automation, fertilizers, irrigation, etc., is contributing to large increases in labor productivity, especially in large commercial farms. Favorable weather conditions have also contributed. According to the FAO, labor productivity in agriculture trebled between 2000 and 2013 (Source, COFACE 2015

[4] AIt Ali and Dadush (2018)

[5] Haut Commissariat au Plan, 2017

[6] OECD International Migration Database. Nearly all of the estimated 5.6 million Moroccans living abroad are in the OECD, and less than 200,000 are in the Gulf.

"Morocco, the challenge of becoming an emerging economy") freeing labor. Most of the productivity increase occurred in recent years. In fact, labor productivity in agriculture advanced at 7.4% a year in the 2007–2014 period, compared to 1.5% a year during the 2000–2007 period (Abbad, 2017).

Female participation in the relevant age group in Morocco is very low, around 26%, yet women are increasingly educated. Precarious employment is prevalent across the Moroccan economy. For example, only about 20% of workers have health insurance. Thus, there is clearly a very large group of underutilized workers knocking at the door of the labor market, whether in the formal or informal sector, in addition to the young.

Another prominent feature of the labor supply is the many newly graduated university students who are looking for good formal sector jobs but not finding them. According to the *Haut Commissariat au Plan*, university graduates in Morocco have the highest unemployment rates. They represent 22% of the total officially unemployed population (which is predominantly urban) versus 4% for those without a degree.[7] However, these numbers have to be interpreted with care, since the official unemployment numbers tend to cover more accurately the urban population and university graduates reside predominantly in cities.

The demand for workers in Morocco has grown slowly in part because growth has been job-poor. As a matter of arithmetic (not economics!), Morocco's very rapid labor productivity growth, 3.4% a year over 2000–2014, would have required growth rates near 6% (not the 4.5% actually achieved) to absorb the inflow of new workers. The private sector, which accounts for some 90% of jobs in Morocco, has produced more with relatively few workers.

Why was labor productivity growth so rapid? Beyond the obvious observation that labor productivity in Morocco was low to start with, three factors are at work. First, Morocco exhibits high rates of savings and investment, 32% of GDP in 2014. According to a comprehensive recent study by Toufik Abbad (OCP Policy Center 2017), capital deepening played a big role in Morocco's recent development. The capital/labor ratio has grown at 4.9%% a year over 2000-2014, far faster than nearly all comparable countries. This large investment was associated with declining rates of capital productivity and relatively low rates of Total Factor Productivity growth (1.1% a year). In a preceding study, Agenor and El Aynaoui (OCP Policy Center, 2015) found that Morocco has one of the lowest rates of investment productivity rates in the world as measured by the Incremental Capital Output Ratio (ICOR). Although a disproportionate share of this investment was public, as in infrastructure, and not always efficient, it nevertheless was complementary to private investment and to labor, and helped both substitute for labor and boost its productivity.

Second, large investment in human capital has played a key role. In fact, Morocco's labor force remains low-skilled in comparison with other MENA countries and countries of similar per capita income (Agenor and El Aynaoui, 2015). According to UNESCO, in 2015, 17% of male

[7] The following link shows the details of these numbers at a quarterly (figure 1) and annual (figure 2) level. http://www.hcp.ma/Taux-de-chomage-national-selon-le-diplome_a267.html

adults and 37% of female adults were illiterate.[8] Morocco's 15-year-olds score low on international standardized tests. However, there has been a very large increase in school enrollment rates, and outcomes are improving. For example, adult literacy rates have improved by some 15% points over the last ten years as the primary school completion rate increased from 58% of the relevant age group in 2000 to 95% in 2015. The male secondary school enrolment rates increased from 42% to 59% over 2005–2012, and those of girls reached 90% of that of boys.

Third, while it is difficult to be sure how much of Morocco's labor productivity growth may be attributed to technological change, there is evidence that it plays a significant role (see Abbad, 2017). Nearly all of Morocco's labor productivity improvement is within sectors – beginning with the aforementioned improvements in agriculture - and relatively little is due to shifts from low value added to high value-added sectors. Morocco's capacity to adopt technology has increased as workers became more educated (4 in 10 have completed lower high-school compared to 3 in 10 in 2000) and as it has become a far more open economy, raising the bar on its firms and its farms to meet international competition. Between 1990 and 2014, Morocco entered into trade agreements with the European Union, the Arab Countries, Turkey and the United States, and reduced its MFN tariffs. This contributed to its trade/GDP as it increased from 25% to 35% and its FDI/GDP increased from 0.5% to 3.1%. Morocco's intense interaction with its large diaspora also contributes to its ability to absorb technology. Insofar as Morocco's technology adoption conforms to international trends, it is skill-biased, meaning that technology tends to reduce the need for unskilled workers but increases the demand for skilled workers. If this interpretation is correct, it would, together with the trend towards capital deepening, help explain the widespread perception of a skill shortage in Morocco and the comparatively high wages of skilled workers.

One prominent manifestation of Morocco's rapidly increasing labor productivity is the declining share of employment in manufacturing, even as the sector's value added grows. A recent analysis suggests that Morocco's inability to create jobs in manufacturing is not the result of low growth of domestic demand for manufactures, which is growing rapidly (Ait Ali and Dadush, 2018). Instead, it reflects rapidly rising labor productivity and a deterioration in Morocco's trade deficit in manufactures, especially *vis-à-vis* China. According to the *Haut Commissariat au Plan*, over 2000–2014 Morocco's manufacturing sector created jobs in food processing, furniture and metal-work and in the high-value added automobile sector, but nearly all these job gains were offset by a large reduction in employment in the garments and textile sector. Nearly all of Morocco's net employment growth is in services and construction. Openness and trade agreements might have been expected to raise the demand for Morocco's labor, especially of the unskilled, but this has not happened. One should add that Morocco is only one among many middle-income countries that have suffered from competition in garments and textiles in the wake of the end of the Multi-Fibers Arrangement in 2004. Only very few countries, such as Vietnam and Bangladesh, have seen significant increase in manufacturing employment in recent years (Dadush, 2015).

[8] According to the Haut Commissariat au Plan (2017), 39% of Moroccans over the age of 15 are illiterate (49% among women).

It is clear, then, that the core of the continued unemployment and underemployment in Morocco lies both in labor supply factors – rapid labor force growth and availability of surplus labor - and labor demand factors – a respectable rate of GDP growth but one associated with vastly improved labor productivity, a reflection of investments in physical and human capital as well as technology improvement.

All this begs the question, however, as to why the market for labor does not adjust faster through lower wages, or why labor demand does not grow more rapidly in the light of labor's increased productivity. In the classical tradition, one can cite a host of product market (e.g. lack of contestability) and labor market (e.g. strict hire and fire rules) rigidities in Morocco that prevent this, which are well known and will not be repeated here (Chauffour, 2018). There is little doubt that these rigidities help explain the failure of the labor market to adjust in the formal sector. But these explanations are not sufficient. There is, for example, much informality in Morocco (approximately 30% of work is in the informal sector), suggesting flexibility in a large part of the economy. Why have wages not declined to absorb the surplus labor in the informal sector?

As in the case of the Gulf countries, one can refer to high expectations and high reservation wages, but that is likely a factor only among the highly educated young people hailing from a middle-class background, a relatively small group. Another possible explanation is that wages in the informal sector are near the subsistence level. The government-mandated minimum wage for agricultural workers in Morocco is just below 70 Dirhams a day (about 7$), which adjusted for purchasing power, would be the equivalent of about $25 at US prices, or $6000 a year. The typical wage in the urban informal sector is around 100 Dirham a day ($10), reflecting the higher cost of living in the cities. Thus, wages for many in the informal sector in Morocco are near the "efficiency wage" level, where paying any less would fail to meet basic needs and result in a more than proportional reduction in productivity.

One can also speculate that the speed of change matters. Morocco is an economy undergoing a large-scale demographic and structural transformation in a very short time. It is not an exaggeration to say that the majority of the Moroccan population is moving into the 21st century from a traditional rural society, as reflected, for example, in the very rapid rate of productivity growth in agriculture. Having achieved independence only in 1956, Morocco is a nation having to cope, quite suddenly, with the most advanced technologies, hyper-globalization, the emancipation of women, urbanization, longer life-expectancies, and less children. Another big change is the formalization of labor relations, which previously were based on established customs and norms, and now are – in the formal sector - governed by strict hire and fire rules. It is, in short, an economy that needs time to adapt to a different world, and this is especially evident in its structural labor market disequilibrium. A few initially very poor economies in Asia have done much better than Morocco in dealing with this tsunami of change, but most other poor economies have done worse.

Will the Moroccan labor market get better soon? In theory, one can be comforted by the fact that labor force growth is slowing sharply due to a massive drop in fertility over the past generation, to less than 1.5% a year presently compared to 2.5% a year in 2000. However, as mentioned above, it is not clear how important a factor these demographic trends are in

accounting for youth unemployment. With luck, GDP growth could be quite solid in coming years (as Europe recovers, oil prices remain low, etc.) (World Bank, 2018). But, unfortunately, other factors will continue to aggravate the employment problem, including youth employment. Technology adoption will almost certainly continue to save more labor, especially low-skilled labor. Morocco's savings and investment rates are likely to remain high and (given the slower growth in the labor force) the capital/labor ratio will continue to increase rapidly. Emigration is constrained. More women are increasingly educated and want to work. And demographic projections indicate that another bulge in the young population entering the labor force can be expected in the 2020's. Furthermore, still, a large part of the population is in the countryside looking for a better life. So, one should not expect that Morocco's employment problem is going away in the foreseeable future. This rather pessimistic conclusion is in line with that of Agenor and El Aynaoui (OCPPC 2015). Their model simulations suggested that, assuming heroically that a sustained growth rate of 6% is achieved, enough jobs will be generated for new entrants, but the stock of unemployed (and underemployed) will barely change.

5 Policy

Conventional thinking about youth unemployment and unemployment broadly, inspired by the experience of advanced countries, does not adequately capture the dynamics of unemployment in the MENA region. A simple model, which hypothesizes that youth unemployment is the result of a combination of slow economic growth, rapid increase in the number of people of working age, and rigidities which prevent the labor markets from clearing appear to work reasonably well in advanced countries but not in MENA region or in developing countries more generally. The statistical evidence relating to the MENA region discussed above and the case study of Morocco shows that five other factors are at work.

Most important among these is the existence of a large pool of unemployed or underemployed workers, many in the informal service and manufacturing sector, and, in the largest numbers, in agriculture. To these, one must add that, increasingly, educated women are more willing to work. This pool of potential workers, looking for jobs in the formal sector or for fuller employment in the informal one, is far larger than suggested by the official unemployment statistics and almost certainly far larger on average than comparable groups in advanced countries. The failure to absorb these workers in the formal sector may be due in part to rigidities such as hire and fire regulations, minimum wage, etc., but, probably more important, in relatively poor countries, is the existence of a lower bound for wages even in the informal sector, where they are close to the subsistence level. The implication is that unemployment and underemployment can remain high for a very long time, even in a rapidly growing economy. This insight is not new, of course,[9] dating back to the Nobel Prize economist Arthur Lewis, but it remains highly relevant to understanding the unemployment trends in the MENA region.

[9] Lewis (1954)

A second influence on unemployment in some countries in the MENA region is rapid labor productivity growth in key sectors. In countries where agriculture still employs large numbers, technical improvement leads to freeing very large numbers of additional workers. Yet, nowadays, the same phenomenon is often seen in the manufacturing sector, especially as it becomes exposed to international competition. One consequence is that it is not so much the aggregate growth rate that matters, but that of the labor-intensive-low-productivity-growth sectors that matters most to deal with high unemployment. To be sure, in general equilibrium, the growth of all sectors matters for employment, but it is still true that the employment elasticity of different sectors varies greatly even after accounting for the interconnections.

Third, emigration and immigration play a crucial role in balancing labor markets in the MENA region, perhaps more so than in any other region of the world. Emigration and immigration depend partly on government policies, but a complete picture of their drivers is lacking. The growth of high-school and university education also plays an important role in reducing the supply of young workers and reducing youth unemployment, at least temporarily.

Fourth, the phenomenon of a coexistence of large immigration and underemployment of large segments of natives (e.g. women), as in the oil-rich countries, suggests that cultural factors, expectations, and skill-matching, also play a very important role in explaining unemployment and underemployment.

Fifth, the presence of natural resources, or the lack thereof, plays an inordinately large role in determining employment levels. In the oil-rich Gulf countries, far more jobs are created than their population can fill. These jobs are found predominantly in the non-traded service sector. The situation in the resource-poor oil importers is the exact opposite; less jobs are created than are required.

In the Moroccan case, policy cannot hope to transform Morocco's surplus labor problem quickly. It can, however, contribute to its mitigation. Beyond the well-known and valuable recipes on how to accelerate aggregate economic growth (make markets more contestable, accelerate governance and business climate reforms, etc.) (Chauffour, 2017), I believe three measures could yield meaningful results: first, recognize explicitly that large and dynamic service sectors, and not only or mainly manufacturing, are the biggest job creators. This implies a more systematic approach to removing barriers to growth in sectors such as tourism, construction and finance. Second, find ways to channel less investment (finance) to the public and more to private sector, and especially in the most labor-intensive sectors and among small enterprises that account for the bulk of job creation in Morocco. Third, look to conclude international agreements deals for more orderly emigration with countries needing labor, which, one must admit, is easier said than done at present. An interesting question is whether additional big investments in education will help the labor market adjustment in Morocco in the long run. The answer is almost certainly no – instead, the overriding need appears to be to make education spending more effective by making it more targeted, selective and by reducing waste.

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Appendix

Data and model specification

The data used in this paper comes from the international Labor Organization (ILO), World Bank's Development indicators, United Nations (UN) Population and the Heritage Foundation covering 147 countries. The period covered is from 2005 until 2015 which is driven by the data availability on the Labor Freedom index published by The Heritage Foundation. The Heritage Foundation constructs a quantitative indicator which accounts for various aspects of the legal and regulatory framework of a country's labor market based on data collected in connection with the World Bank's Doing Business. In particular, the index is comprised of the six equally weighted factor.

With the purpose to explain which factors influence youth unemployment rate within a simple demand supply framework several variables are considered. First of all, we control for the labor market rigidly which is captured by the Labor Freedom Index. Demand and supply shocks are proxied by income and youth population growth rates. Therefore, the suggested specification is the following:

$$YouthUnemp_{it} = \mu_t + \gamma_t + LabFreedom_{it} + Income_{it} + IncomeGrowth_{it} + PopGrowth_{it} + \epsilon_{it}$$

Where $YouthUnemp_{it}$is the youth unemployment rate in a given year *t* in country *i*, μ_t and γ_t are country and year fixed effects respectively; $LabFreedom_{it}$ is the labor freedom index of country *i* in year *t*; $Income_{it}, IncomeGrowth_{it}, PopGrowth_{it}$ are variables describing income, income growth and youth population growth of country *i* in a given year *t*. We implement a feasible estimator for Linear Models with Multi-Way Fixed Effects introduced by Correia (2017). Robust standard errors are clustered on a country level.

As can be seen from the Table 2, coefficients for labor freedom index, income and income growth appear to be significant and are said to negatively affect the youth unemployment rate. At the same time, the results indicate that the growth of young population does not seem to be a significant factor. However, as suggested by the adjusted R squared much of the variation in the unemployment rate still comes from the differences between the labor markets in countries covered by the regression analysis. Only a small share of the changes in unemployment rate can be explained by the measure of labor market flexibility, income and population growth.

Table 2: Fixed Effects regression, 2005–2015.

The dependent variable is Youth Unemployment rate	
VARIABLES	Fixed Effects
LaborFreedom	-0.0760**
	(0.0320)
Income	-0.000145**
	(7.08e-05)
IncomeGrowth	-34.04**
	(13.96)
YouthPopGrowthCAGR	3.085
	(16.38)
Observations	1,511
R-squared	0.915
Adjusted R-squared	0.905
Within R-squared	0.064
Adjusted within R-squared	0.061
Country FE	YES

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Data description

Variable name	Variable description	Source
Youth Unemployment rate	The youth unemployment rate simply reflects the proportion of the labor force ages 15-24 that does not have a job but is available and actively looking for work.	ILO modelled estimates
LabFreedom	Labor Market Freedom is an index of economic freedom published by The Heritage Foundation. It is a quantitative indicator which accounts for various aspects of the legal and regulatory framework of a country's labor market based on data collected in connection with the World Bank's Doing Business.	The Heritage Foundation
Income	Income is presented by PPP adjusted GDP per capita.	World Bank's World Development Indicators
IncomeGrowth	Income growth is presented as PPP adjusted GDP per capita growth, using CAGR (backward looking 5 year average).	World Bank's World Development Indicators
YouthPopGrowthCAGR	Youth population growth rate is presented by CAGR (backward looking 5 year average).	UN Population
IncomeMAver	Moving average of Income (15 years)	World Bank's World Development Indicators

In an alternative specification, we control for income levels using a long (15 year) moving average of PPP-adjusted per capita income. In this specification, the variables are not significant in the developing country group and in the whole sample, while they account for about half of the variation in youth unemployment among developed countries, and all variables are significant and of the correct sign.

Table 3: Fixed Effects regression, 2005–2015.

The dependent variable is Youth Unemployment rate	(1)	(2)	(3)
VARIABLES	All countries	Developing	Developed
LaborFreedom	-0.0552	0.00431	-0.199**
	(0.0351)	(0.0213)	(0.0974)
IncomeGrowth	-7.363	-2.360	-276.3***
	(6.974)	(2.745)	(40.28)
IncomeMAver	7.12e-05	-2.74e-06	-0.000767**
	(0.000125)	(0.000110)	(0.000302)
YouthPopGrowthCAGR	17.76	-13.61	157.2*
	(19.93)	(16.99)	(79.04)
Observations	1,461	1,136	325
R-squared	0.911	0.950	0.883
Adjusted R-squared	0.900	0.944	0.864
Within R-squared	0.020	0.004	0.502
Adjusted within R-squared	0.017	0.001	0.495
Country FE	YES	YES	YES

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

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