Why is Cuba's Unemployment Rate so Low?

Or is it really that Low?

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1. For many years**, Cuba's official unemployment rate (ONEI) has been remarkably low** in comparison with other countries, including all those in Latin America. This has sometimes been attributed to cheating by authorities eager to show a good economic performance, particularly in the social area. But the low levels of unemployment reported by ONEI are unlikely to result from statistical manipulation.[1] In fact, they are most probably a truthful reflection of what they are advertised to be: the number of jobless people actively looking for a job, in other words *open* unemployment.

But if there is no cheating, why is it the official unemployment rate is so low by international standards? And why is it so low even in periods where domestic economic conditions are extremely weak, like the early 1990's? The explanation suggested in this article is that, given the peculiar characteristics of the Cuban economy, **the conventionally defined unemployment rate is a very bad indicator of labor market conditions** because: (i) it fails to take into account disguised unemployment, which has been very high at times and also highly; and (ii) it fails to include discouraged workers which in Cuba (and elsewhere) are normally excluded from open unemployment.

2. Shortcomings of open unemployment as an indicator of labor market conditions. In line with internationally accepted definitions, **open unemployment** is the difference between the labor force and employment. In other words, it measures the number of people that are unemployed and are looking for a job. The problem is that, in the case of Cuba, this measure of joblessness is biased downward and is highly inaccurate as an indicator of labor market conditions. For two reasons it suffers from a *downward bias: (i)* because it fails to include disguised (or hidden) unemployment in the state sector, which are *effectively* unemployed even though they are not looking for a job. (ii) because it excludes the number of discouraged workers which are not part of the labor force and therefore not part of open unemployment because they are officially not looking for a job, but evidence suggests that they can move in and out of the labor force as cyclical conditions evolve.

Open u is also an *inaccurate* indicator because both disguised unemployment and the number of discouraged workers has been highly variable over time.

3. Looking for alternative indicators (fig.1). u_1 and u_2, have displayed considerably higher and much more variable rates unemployment rates than the official rate u_0. The way to move from one concept to the other is summarized in Table 2.

Estimating disguised unemployment. Effective unemployment (U_1) is defined as open unemployment plus disguised unemployment in the state sector. (It is assumed to be inexistent in the private sector, where there are no state subsidies are inexistent). The effective unemployment rate (u_1) is the ratio of the level U_1 by to the potential labor force. The concept of potential labor force is used instead of the conventionally defined labor force because it is a broader indication of full employment[2].Disguised unemployment is calculated as the difference between total and *active* employment in the state sector. Table xxx: the calculation of active employment is based on two profit maximizing conditions: one for those enterprises that receive government subsidies; and another for those that do not. Two types of government subsidies are considered:
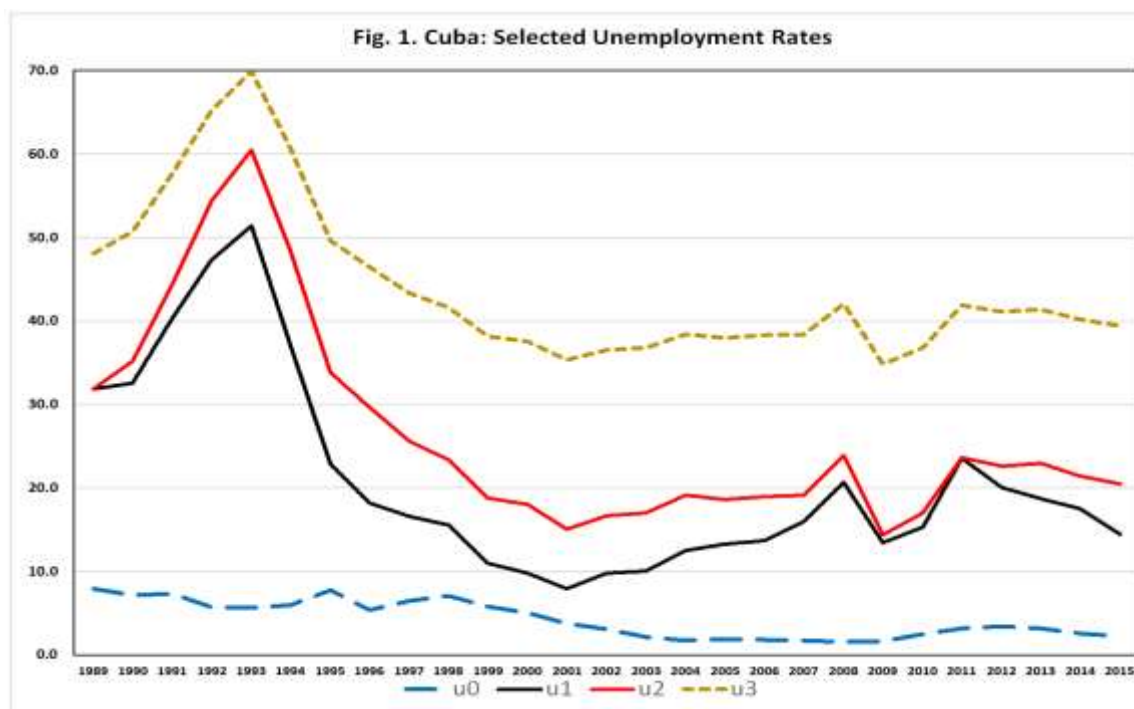
Source: ONEI and author's estimates. For defintions see Table 2.

Table 1. Unmploymnt Rates in Selected Countries
(In percent of the labor force)

Country	2005	2015
OECD	**6.55**	**6.77**
United States	5.07	5.28
Canada	6.75	6.94
France	8.49	10.36
Germany	11.17	4.63
Spain	9.15	22.06
United Kingdom	4.75	5.3
Japan	4.42	3.38
Latin America & Caribbean	**9.0**	**6.5**
Argentina	11.6	6.5
Bolivia a	8.1	2.5
Brazil	9.8	6.8
Chile	8.0	6.2
Cuba	**1.9**	**2.4**
Colombia	13.7	9.8
Costa Rica	6.9	9.7
Dominican Republic a	7.3	3.1
Ecuador	8.5	9.6
El Salvador	7.3	6.7
Honduras	6.9	8.8
Mexico	4.7	5.1
Nicaragua a	7.9	7.6
Panama	12.1	5.8
Paraguay	7.5	6.8
Peru	9.6	8.5
Uruguay	12.2	7.8
Venezuela	12.3	7.1
Bahamas	10.2	12
trinidad and Tobago	8.0	6.4
Jamaica	11.2	13.5

Sources: Economic Commssion for Latin America and the Caribbean, International Labor Office, and OECD

a Data listed under 2015 is for 2014

(i) Subsidies for losses (*subsidios por perdidas*) which were introduced after the elimination of Soviet/Russian subsidies in the earl 1990's to avoid a surge in open unemployment. They were removed gradually from 1994 to 2000 as the economy recovered, but have shown a tendency to rise since then.

(ii) What *ONEI* mysteriously labels "other subsidies" which I believe are provided to offset the cost to domestic enterprises of oil imported from Venezuela.[3] These subsidies were introduced in 2001 and increased rapidly through 2011. We don't know exactly what happened after that, because ONEI suddenly stopped publishing the breakdown of state subsidies by category, but they, they most probably dropped after 2014 as the price of oil collapsed and Venezuela sharply reduced its supplies of petroleum and products to Cuba.

For two reasons, the methodology describe above to estimate hidden unemployment cannot be used for the period after 2011. First, as noted above, ONEI discontinued publication of key data required to implement this methodology. Second, in 2011 the government implemented a radically new strategy to deal with hidden unemployment. In that year, it initiated a vast government program aimed at cutting redundant workers in the state sector and stimulating private employment--perhaps the most important structural reform carried out by Raúl Castro's administration. From 2010 to 2015 the number of state employees was reduced by an unprecedented 944 thousand, or 18 % of the labor force. Moreover, in sharp contrast with past practice, the cuts resulted directly from administrative action, and not indirectly from a reduction in subsidies. For these reasons, beginning in 2011 disguised unemployment had to be calculated in a different way, namely by assuming that the fall in disguised unemployment was equal to the reduction in total state employment. This is somewhat arbitrary because changes in state employment can result from factors unrelated to the policy to cut redundant workers. The effects of that policy were so large, however, that errors of this kind are likely to be quite small.

Cuba does not publish data on **discouraged workers**. Here this variable is estimated as the difference between the potentially labor force and the conventionally defined labor force. The estimated number of discouraged workers in Cuba has fluctuated significantly over the past 2 ½ decades, rising during the post-Soviet crisis in the early 1990s, falling over the subsequent recovery through 2010, but increasing again from 2011 to 2015.

Table 2: Cuba: Selected Uneployment Rates[a]

		1993	2001	2008	2011	2012	2013	2014	2015
u_0	**Open unemployment**	6.2	4.1	1.6	3.2	3.5	3.3	2.4	2.4
$u_{0'}$	**Open unemployment**	5.6	3.8	1.5	3.2	3.4	3.1	2.6	2.2
	plus: disguised unemployment	45.8	4.1	19.1	20.3	16.6	15.6	14.9	12.3
u_1	**Effective unemployment**	51.4	7.9	20.6	23.5	20.0	18.7	17.5	14.5
	plus: discouraged workers	9.1	7.2	2.9	0.1	2.0	4.3	3.9	6.0
u_2	**Extended unemployment**	60.5	15.1	23.5	23.6	22.0	23.0	21.4	20.5
	plus: permanently unemployed	9.4	20.2	18.6	18.2	19.1	18.3	18.8	19.04
u_3	**Non-employment index**	69.9	35.3	42.1	41.8	41.1	41.3	40.2	39.5

Sources: ONEI and author's estimates

[a] All variables are in percentr of the potential labor force except u_0 which is in percent of the conventionally defined labor force; and u_3 which in percent of the population of workjng age.

Discouraged workers declare that they are currently not looking for a job, but in practice they can be quickly induced to rejoin the labor force if real wages become sufficiently attractive. This is confirmed by the regression results presented in the first line of Table 3, which indicate a significant relation between the share of discouraged workers in the population of working age and the real wage in the public sector. The adjusted unemployment rate (u_2), which includes these workers in the numerator, could be a better indicator of labor market conditions.

The plan to cut redundant employees from the public sector and encouraged them to join the private sector appears to have been largely successful. It would seem, however, that some of these employees failed to find a private job and decided to leave the labor force This is confirmed in the second regression of Table 3 which indicate a negative relation between the share of discouraged workers and the share of public sector employment: a one percentage point cut in public sector employment leads to a ¼ percentage point increase in discouraged workers. [4]

Table 3. Cuba: Equations for the Number of Discouraged Workers

Explanatory variables				
Constant term $\underline{c}$	Real wage in public sector $\underline{\ln(w/p)}$	Public sector employment $\underline{E_s/N}$	Adjusted $\underline{R^2}$	Standard error
13.1 (8.9)	-8.89 (6.1)		0.584	1.61
28.8 (12.2)	-8.47 (5.7)	-0.27 (4.6)	0.728	1.30

Note: the dependent variable in both equations is the estimated number of discouraged workers (D) as a share of the working age population (N); P is the GDP deflator; Es is employment in the public sector. The sample period is 1989-2015 (27 observations)
Numbers in parenthesis are t-statistics.

* * *

4. Do unemployment rates capture the degree of labor market slack?

Fig. 1 and Table 2 illustrates how severely changes in labor market slack haves been obscured by focusing on u1and ignoring changes in both hidden unemployment and discouraged workers. It also indicates that a significant fraction of Cuba's adult population continues to be unemployed, even though this fraction has diminished considerably since it peaked in the early 1990s.

If unemployment rates truly reflect the degree of labor utilization, we would expect them to be highly correlated with the growth of the economy. We performed regressions of the various unemployment rates discussed in this article against the growth of real GDP for the period 1990-2015 (Table 4) The broad unemployment rates u_1 and u_2 have much higher growth coefficients, much higher t ratios, and higher adjusted correlation coefficients.

Table 4. Regressions of Selected Unemploymemt Rates vs. Real GDP Growth

Dependent variable*		Real GDP growth	t ratio	Adjusted R^2
Open unemployment	u_0	-0.166	2.36	0.224
Effetive unemployment	u_1	-1.131	7.51	0.698
Extended unemployment	u_2	-1.579	6.70	0.637

Note: equations are estimated for the period 1990-2015 (26 observations).
* Unemployment in percet of the potential labor force.

5. Macroeconomic and structural policies and the evolution of unemployment: an interpretation.

The gap between actual and full employment widened dramatically from 1990 to 1994, following the end of Soviet/Russian assistance and the deep economic contraction that followed (see Fig. 1). But the gap narrowed from 1994 to the nid-2000s, as the economy expanded, and subsidies for enterprise declined. Thus, during that period the degree of labor market slack was absorbed at a faster pace than would have been indicated by the open unemployment rate, as hidden underemployment plummeted and the number of discouraged workers dropped.

Growth accelerated from 2005 to 2008 against the background of large scale Venezuelan investments and subsidies on oil deliveries to Cuba. But in 2008-09 the economy was rocked by a severe financial crisis, as the effect of an overly loose fiscal policy was aggravated by a drop in the world price of nickel and three destructive tropical hurricanes led to an unusually large current account deficit and serious external payments difficulties This experience suggested that the repaid expansion of aggregate demand in the mi-2000s had created a serious risk of overheating. An appropriately tight fiscal policy accompanied by substantial wage restraint was adopted by the Raúl Castro administration, leading to an improvement in the external current account.

In 2015, he Cuban economy was hit by a huge deflationary shock as Venezuela cut oil deliveries by almost one half. The Cuban authorities reacted by shifting to a highly expansionary fiscal, monetary, and wage policies. These policies, coupled with a boom in tourism, apparently succeeded in bringing about a resumption of growth in 2017, following a surprisingly small contraction in 2016. Labor market indicators during the period 2011-16 are difficult to interpret. The effective unemployment rate fell because the government's plans to shrink state payroll led to a surge in private employment. Bu the decline in the extended unemployment rate was considerably smaller because some of the employees released by the state did not find a job in the private sector and decided to leave the labor force.

* *

The conclusions offered in this article are based on calculations that are by no means precise. The results are sensitive to several assumption, particularly the application to government agencies of a model intended to capture the behavior of state enterprises. But the main conclusions are robust. In particular, the sharp turn towards expansionary macroeconomic policies following the Venezuelan oil shock means that, sooner or later, the economy will recover and so will the demand for labor. Since Cuba's population is expected to decline over the medium-to long-term, increased labor utilization is bound to reach a limit and the continuation of expansionary demand policies will threaten the sustainability of the current account and the fixed exchange rate. At that point, growth will have to come from new structural reforms, including a broadening of the private sector and a large increase in capital formation.

Annex A. Measuring hidden unemployment

Since there is no published data on hidden unemployment, this variable was estimated on the basis of two types the subsidies provided by the Cuban government to state enterprises (i) to keep open unemployment low and avoiding enterprise closures—an ancient communist preoccupation; and (ii) to insulate firms from the cost of petroleum products imported from Venezuela under the 2001 Acord. The methodology used can be summarized as follows.

The profit maximizing condition for a hypothetical state *enterprise that does not receive subsidies* is the familiar equality between the marginal product of labor and the after tax real wage rate, i.e.

$$\alpha\, y\,/\,E_s{}^* \;=\; (w + \tau)\,/\,p$$

where $E_s{}^*$ is the level of *active* state employment, α is the elasticity of output with respect to labor, y is output, p is the price level, w is the wage rate in the state sector, and τ is the payroll tax rate.[5]

Similarly, the profit maximizing condition for *an enterprise that receives a subsidy at a rate σ* on condition of avoiding layoffs is:

$$\alpha\, y\,/\,E_s \;=\; (w + \tau - \sigma)\,/\,p$$

Dividing the first equation by the second yields:

$$E_s{}^* = \; (w + \tau - \sigma)\,/\,(w + \tau)\, E_s$$

Active state employment $(E_s{}^*)$ can be calculated on the basis of this equation since all the right-hand-side variables are observable (except that the subsidy rate is no longer available for 2011 and subsequent years. The level of hidden unemployment is the difference between total and active state employment $(E_s – E_s).$[6] The level of effective unemployment is the sum of open and disguised unemployment $U_1 = (Uo + E_s – E_s{}^*);$ and the effective unemployment rate u_1 is the ratio $U_1/F^*,$ where F^* is the potential labor force.

Annex B. Estimating the number of discouraged workers.

Cuba does not publish data on the number of discouraged workers and therefore the data has to be estimated. The methodology used is as follows.

The difference between the population of working age *(N)* and the labor force *(F)* has two components: a cyclical component consisting of discouraged workers; and (ii) an exogenous element *(X)* determined by demographic factors (notably (age and gender). X may include stay-at-home spouses, early retires, and the disabled. Using lower case letters to denote ratios to N:

$$n - f = x + d$$

The unobservable components x and d can be estimated as follows:

Assume that the structural component X is a constant fraction $(1 - \lambda)$ of the population of working age. The discouraged workers ratio will then be:

$$d = \lambda n - f = f^* - f$$

where f* can be interpreted as the potential labor force, a broad concept that includes discouraged workers. Table 3 shows that the rate of discouraged worker estimated according to this methodology is correlated with the real age rate.

Annex C. Definitions and sources of key variables.

Active employment *(E*)* is the sum of private employment and active state employment in the state sector.

Active employment in the state sector *(E_s*)* is equal to total state employment minus hidden unemployment, which is estimated as explained in Annex A.

Discouraged workers *(D)* is the difference between the potential and the conventionally defined measures of the labor force.

Hidden unemployment ($\hat{U}$) is the difference between total state employment and active state employment. (See Annex A).

Potential labor force *(F*)* is the sum of the conventionally defined labor force and the number of discouraged workers. It is estimated as a constant λ multiplied by the population of working age, where λ is the historical peak level of the participation rate.

Payroll tax rate *(τ)* is the sum of social security contributions and taxes on the use of the labor force made by enterprises, divided by total employment. Following Pérez (2000), enterprises are assumed to p ay 5/17 of all social security contributions (a simplification of a more complex actual scheme) and 100% of the r\taxes on the use of the labor force.

Real GDP *(y)* From ONEI, various issues.

Subsidy rate *(σ)* the sum of state subsidies to enterprises divided by the number of employees in the state sector. The two subsidies are: (i) The subsidy for enterprise losses (*"transfrencias a empresas por perdidas"*) and (ii) the subsidy to cover the cost of oil imports from Venezuela *("otros subsidos")*. The source is ONEI's fiscal table for the state sector. In 2012 ONEI discontinued publication of these two variables.

Total employment (E) includes state employment (both active and inactive) and private employment From ONEI and authors' estimates.

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Endnotes

[1] ONEI sometimes discontinues the publication of information under instruction from senior government officials, as in the cases of earnings by sector and state subsidies. However it rarely manipulates data although an exception may have occurred in the case of GDP as documented by Mesa ago and Pérez López (2009).

[2] In this article the state sector includes the general government and state enterprises including state-owned agricultural cooperatives. Unlike the concept of state sector used by ONEI, it also includes the Basic Units of Cooperative Production (*Unidades Basicas de Producción Cooperativa* or UBPCs) which suffer from considerable interference from government agencies and have received significant subsidies in the past. Both definitions of the state sector exclude the considerably more independent Cooperatives of Credit and Services (CCS), which are included in the private sector.

[3] The relationship between oil imports and "other" subsidies is examined in Hernández-Catá (2015a)

[4] It is also likely that some of them moved to the underground economy, in which case our indicators would overstate joblessness.

[5] The derivation of this formula is explained in detail in Hernández-Catá (2015a). The formula used in this paper is more complete, however, as it incorporates the effects of payroll taxes which include the social security tax and the "tax on the use of the labor force". In addition, this article incorporates the effect of subsidies on petroleum imports.

[6] Non-subscripted variables apply to the entire economy which comprises the state and the private sectors. The private sector includes the self-employed, individual private farmers, the Cooperatives of Credit and Services, and a residual category that includes foreign enterprises, associations, and salaried private workers.