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# ENTERPRISE DEVELOPMENT AND MARKET COMPETITIVENESS (EDMC)

## EVALUATION OF THE BRIDGES BETWEEN EDUCATIONAL INSTITUTIONS AND BUSINESSES IN ARMENIA

December 10, 2011

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### ***Abbreviations***

BEEPS –Business Environment and Enterprise Performance Survey

CAPS – Competitive Armenia Private Sector

ETF - European Training Foundation

GCR – Global Competitiveness Report

GOA – the Government of Armenia

MOES – Ministry of Education and Science

NCVD - National Council for Vocational Education and Training Development

NSS – National Statistics Service of the Republic of Armenia

VET – Vocational education and training

### ***Acknowledgements***

We would like to thank those individuals and organizations who devoted their valuable time to answering our questionnaires and made themselves available for in-depth discussion of the current state of affairs of the Armenian labor market and educational institutions.

## **Introduction**

There appears to be a consensus in Armenia that there is a mismatch between demand and supply for qualified labor and that there is little up-to-date information on the actual demand. This information is necessary so that the educational institutions can respond to market signals and supply the needed skills and professions.

CAPS sponsored “National Competitiveness Report Armenia 2010: Higher Education Challenge” concluded in its analysis of the situation: “What is needed is better information on the labor market, policies that promote economic growth and labor absorption, and more academic counselors to advise on career choices or act as liaisons between industry and the institution.”<sup>1</sup>

A recent European Training Foundation (ETF) report on “Business and Education: Armenia” addressed the same problem. It found that “the importance of cooperation between business and education has been increasing and it is recognized as a vital tool to make human resources development in line with the requirements of the society and of the economy.” However, “the existing experiences remain isolated cases of best practice, mainly originating from individual ideas and good will, whose methodology and results do not contribute at the improvement of the system”.<sup>2</sup>

The process of connecting labor market supply and demand, businesses, the economy, and the educational institutions has started. The Government of Armenia (GOA), business chambers and guilds, and VET institutions (schools, colleges and universities), assisted by international donors, have undertaken numerous initiatives to deal with the challenge. They have utilized new and upgraded channels to link supply and demand for qualified labor and established and strengthened relationships with institutions such as career centers, the National Council for Vocational Education and Training Development, sectoral committees for educational standards, boards of vocational education institutions, training and competitiveness/innovation funds, etc).

## **Objective, approach and methodology**

This survey represents a continuation of previous efforts to explain the situation and offer workable solutions.

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<sup>1</sup> National Competitiveness Report Armenia 2010: The Higher Education Challenge, Economy and Values Research Center, Yerevan, 2010, p. 53. The report quotes a 2008 survey of engineering companies, 80% of which are dissatisfied with the practical knowledge of graduates and more than 50% found the graduates' theoretical knowledge to be insufficient (Ibidem). This information is very different from the data from World Bank – EBRD 2009 BEEPS survey: the percent of Armenia firms identifying an inadequately educated workforce as a major constraint is 22.9 - much lower than the average for Eastern Europe and Central Asia (30.7%) or the world (27.4%), see: <http://enterprisesurveys.org/Data/ExploreEconomies/2009/armenia#workforce> .

<sup>2</sup> Milena Corradini, Business and Education Study: Armenia, Turin, ETF, September 2010, p. 3, 4. The islands of best practice are reviewed on pages 7-10; see also annexes that feature Yerevan State Trade and Service College, Yerevan State Armenian–Greek College of Tourism, Service and Food Industry and State Engineering University of Armenia and Synopsys Armenia.

## **Objective**

The objective is two-fold:

- To understand whether VET schools, colleges and universities are working to increase the employability of their students through adjusting their curricula to what is demanded by the economy as well as to measure their success in doing so;
- To provide a simple, easy to perform survey on the above mentioned issues.

## **Approach**

We measured the utility of efforts and practices that were expected to bridge gaps in the labor market and reviewed the statistics and other sources that could help us understand this process.

We assumed that:

- The supply and demand for a competitive workforce is private sector driven;
- The interventions brought to bear shall facilitate communication between business and educational institutions;
- The educational system, as a core aspect of the human capital and workforce development process, represents a form of human capital investment and it is closely related to enterprise competitiveness.

## **Methodology**

### Perception survey and statistical evidence

In order to assess the efficiency, usefulness and quality of the existing bridges between labor supply and demand, we compiled a brief questionnaire, which asked respondents to state whether respective bridges existed and to what extent they were being utilized by their organization to assess their quality.

This part of our survey was controlled via a reference group of respondents and another group that was interviewed face-to-face.

The respondents were: forty-one representatives who were directors and managers of nine VET schools, seven chambers and guilds, thirteen universities and four experts as a reference group. After we collected the answers, a broader reference group of organizations was used for in-depth interviews to interpret the answers. The group consisted of three business entities, two VET schools, two colleges and two universities. The questionnaire itself was compiled after preliminary meetings with representatives of seven GOA bodies (national and regional), six donor organizations, three VET schools, three colleges, three universities, four enterprises and three not-for-profit entities.<sup>3</sup>

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<sup>3</sup> Similar questionnaires were previously used to assess conditions for workforce competitiveness in Croatia, in 2003 by Kevin E. Murphy of JE Austin & Associates and Evelyn Ganzglass of Educational Development Center Inc., and in Bulgaria in 2004 by one of the authors with the assistance of Kevin Murphy and Evelyn Ganzglass.

The last part of the survey is a review of recent hard data on the labor supply-demand mismatch, Armenia employment turnover and VET trainees financed by medium and large enterprises<sup>4</sup>, on youth unemployment, and on international labor supply-demand mismatches.

The results are indicative and will be used to identify the current challenges for both the demand and supply side of the labor market. They are fully representative of the educational system since questionnaires and interviews covered more than 20% of the universities, 10% of the colleges and 20% of the VET schools. In terms of representing business attitudes, the findings are valid for the community as a whole, but not necessarily for the specific challenges firms encounter in economic sectors.

### Types of “bridges” assessed

The questionnaire lists ten such bridges:

1. Programs that place graduates in jobs and trace their employability and careers (e.g. career centers, scholarship initiatives, student career clubs, department/officers that help students find jobs); in the case of businesses, such activities may include job offers, CVs circulated, and needed personnel consultations, etc.;<sup>5</sup>
2. Alumni participation in their former school’s, college’s and/or university’s programs; in the case of businesses, these links would be viewed as employees’ participation in such programs;
3. Matching supply and demand represented by internships;
4. Participation of employers in curricula development; whether it is through established formal bodies like NCVD, sectoral committees, VET management bodies, or on a private and informal basis;
5. Work of teachers and professors as consultants for businesses. It helps them understand the demand for knowledge, skills and professional qualifications; this work may be performed as part of the education institution’s strategy or privately, as a secondary employment opportunity;
6. Courses taught by business executives at educational institutions. This helps both sides of the equation; a typical example of these would be business managers teaching MBA courses in specialized VET institutions;
7. If the above mentioned courses represent an in-kind participation of businesses in the education of future workers and professionals, the courses and R & D financed by businesses would, by contrast, represent a form of long-term commitment;

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<sup>4</sup> These are the enterprises reporting NSS.

<sup>5</sup> The term “program” in the broadest sense.

8. To a considerable degree, organic relations between businesses and education emerge from bonds of trust and mutual understanding; the joint events attended by both the educational institutions and businesses may help in building this sense of trust;
9. The private sectors' role in testing the output of the educational system;
10. This covers the dual careers of business professionals who are teachers and teachers who are also business professionals; This is commonly found in a number of specific occupations (lawyers, accountants, statisticians and financiers), but it could also include other professional areas.

## Findings

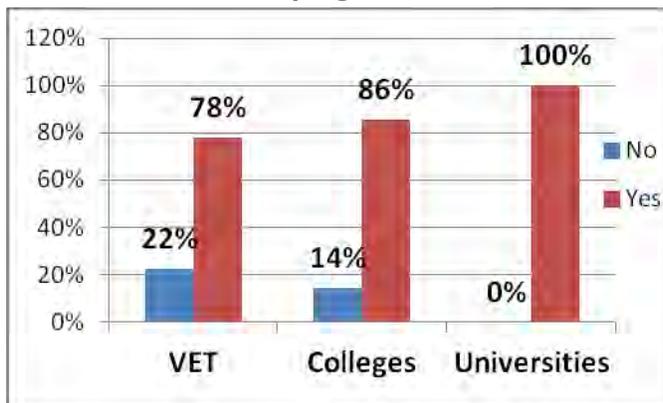
### I. VET schools, Colleges, and Universities

#### Employability programs

With regard to the question of whether or not educational institutions have programs to assist students in finding jobs, all universities answered that they have such programs; only 14% of colleges and 22 % of VET schools responded that they did not have such programs. The VET schools are expected to educate workers with a distinct set of skills, employable in presumably well-defined sectors and businesses; the entire school is such a program – all students are *de facto* interns (see Chart I.3). As for the colleges – their students would often be roughly the same age as university students, facing similar career challenges.

Chart I.1

Question I. Are there programs to assist students in finding jobs?



Those who have such programs rated the effectiveness of the programs above average:

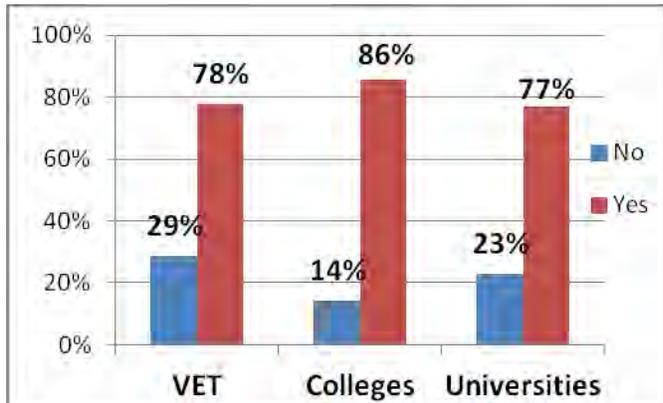
- VET schools – 6.0,
- Colleges – 6.3,
- Universities – 5.7.

#### Graduates' links with alma maters

Approximately 80% of the three institutions indicated that their alumni are regularly participating in their projects and programs.

**Chart I.2**

**Question 2. Is there participation by those who graduated from schools/colleges/universities?**



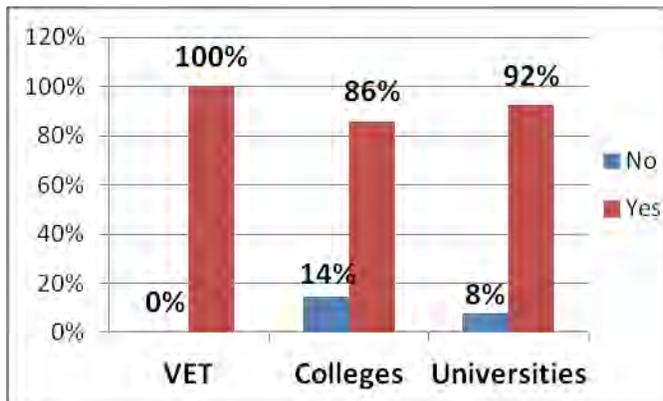
The quality of participation was rated:

- VET schools – 5.7,
- Colleges – 5.2,
- Universities – 5.9.

### Internships

**Chart I.3**

**Question 3. Are there easy and popular intern practices?**



Not surprisingly, internships represent the most popular bridge between demand and supply in the labor market; more than 90% of the surveyed institutions (100% in the case of VET schools) indicated that they have internship programs.

The quality of the programs is:

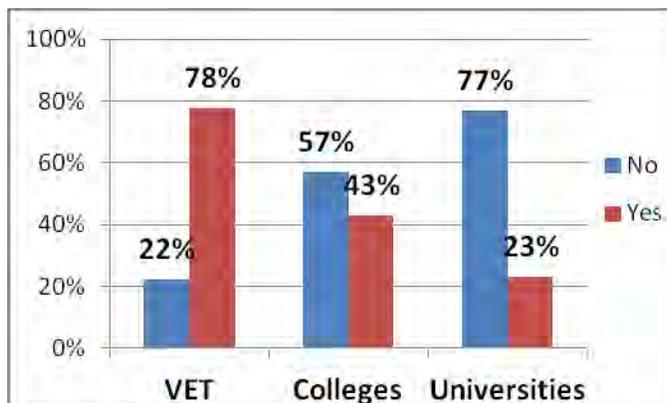
- VET schools - 6.7,
- Colleges – 7.0,
- Universities – 6.2.

### Private sector participation in curricula development

When asked about the private sector's participation in their curricula development, the answers were different: the higher the education institution level the lower the participation.

**Chart I.4**

**Question 4. Is there private sector participation in curricula development?**



Only 23% of the universities indicated that there is such participation; however, 43% of the colleges and 78% of the VET schools indicated such participation. Expectedly, the effectiveness of private sectors' participation also differed widely – from nearly “excellent” to “below average”:

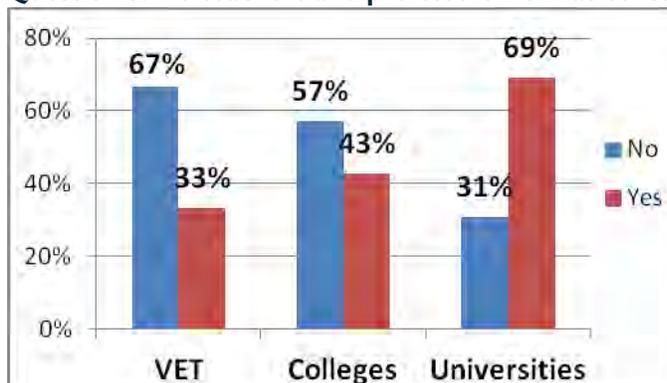
- VET schools– 4.6;
- Colleges - 3.7;
- Universities – 8.0.

### Teachers as consultants and business people

Sixty-nine percent of the universities responded that their professors work either as consultants or in businesses; the number is lower for the colleges – 43%, and for the VET schools – 33%.

**Chart I.5**

**Question 5. Do teachers and professors work as consultants?**



The institutions whose teachers are working for a business rated the quality and the effectiveness of their response as follows:

- VET schools - 4.0,
- Colleges- 5.7
- Universities -6.4.

Purely private consulting contracts tend to decapitalize schools, colleges and universities. Presumably, the educational institution would benefit if they formalize such opportunities and build their consulting reputations.

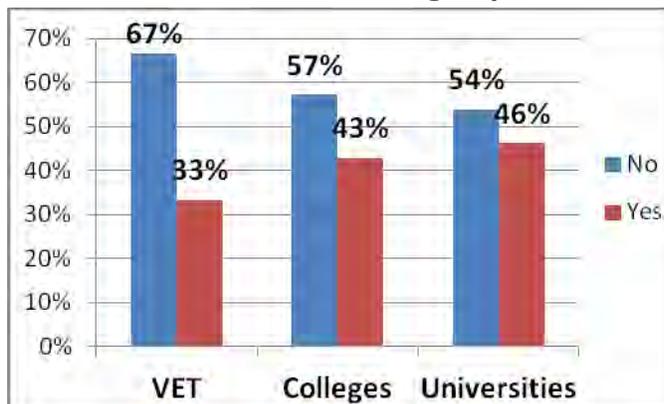
#### Courses by business executives and enterprise professionals

Less than half of the institutions: universities – 46%, colleges – 43% and VET schools – 33%, reported that they have courses taught by business professionals.

The question does not specify whether these are courses in business management, MBA programs, or whether they are part of introductory or advanced programs in economics and applied sciences.<sup>6</sup>

**Chart I.6**

**Question 6. Are there courses taught by business executives?**



Those who provide such courses rated their usefulness above average;

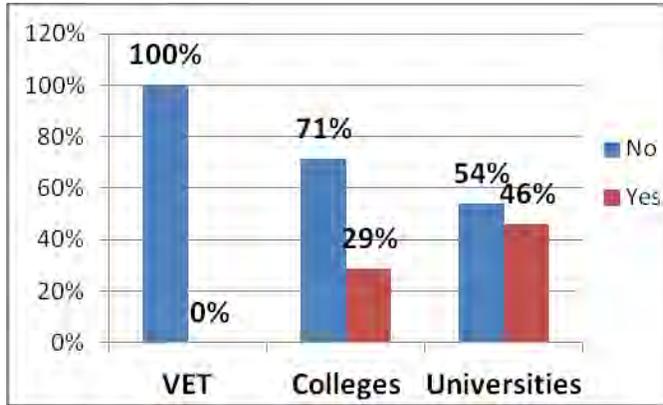
- VET schools -6.7,
- Colleges – 6.0,
- Universities – 6.8.

<sup>6</sup> The business perspective is necessary for educational institutions in understanding business and entrepreneurship, as is familiarization with entrepreneurs' views on operations, technologies and human capital.

## Private sector financed activities

**Chart I.7**

**Question 7. Is there private financing of courses and R & D?**



Forty-six percent of the universities answered that the private sector is funding courses and R&D activities; however, 29% of the colleges and none of the VET schools reported this.

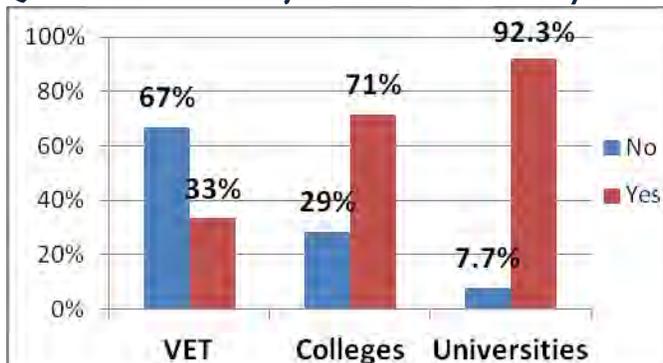
- VET schools – 0
- Colleges – 4.5
- Universities – 5.2

## Formal and informal events

The easiest and most inexpensive way to consult with businesses does not seem to be very popular with VET schools, but it is common with colleges and universities.

**Chart I.8**

**Question 8. Are there joint events attended by both teachers/academics and businesses?**



Those who attended such events rated their quality and usefulness as follows:

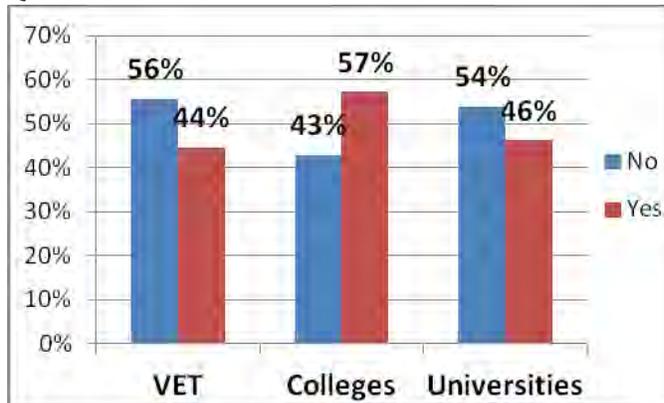
- VET schools - 6.0,
- Colleges – 6.6,
- Universities – 5.3.

## Business evaluation of graduates and curricula

This bridge is a logical continuation of the practice to invite business professionals to take part in curricula development. It reinforces that those who helped set educational programs are entitled to judge the output. About half of the institutions (universities – 46%, colleges – 43% and VET schools – 44%) indicated that the businesses were involved in the evaluation of the quality of the education.

**Chart I.9**

**Question 9. Are businesses involved in the evaluation of education and curricula?**



If we compare these answers with those of Question 4, we will find that: in VET schools the businesses are 40% more likely to take part in curriculum development than in the evaluation of the outcomes; in colleges, businesses are equally likely to take part in both processes; and with universities, business professionals are twice as likely to participate in the evaluation of educational programs, rather than drafting them.

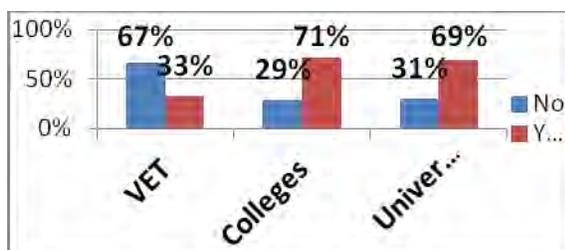
The quality ratings

- VET schools – 4.5
- Colleges – 4.0
- Universities – 6.3.

## Dual careers

**Chart I.10**

**Question 10. Are there dual careers: teachers/academics working in business and business professionals in academia?**



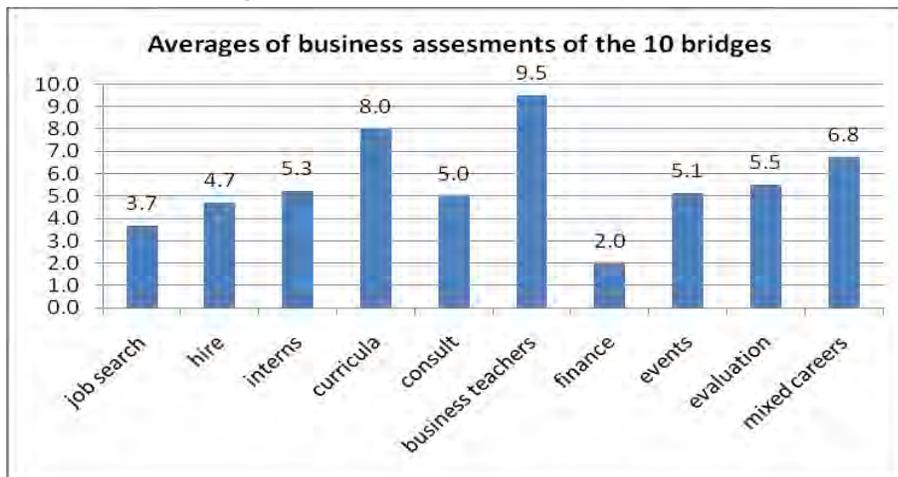
Sixty-nine percent of the universities, 71% of the colleges and 33% of the VET schools responded that their faculties have dual careers. They rated the quality of their answers as follows:

- VET schools – 5.0,
- Colleges – 3.4
- Universities – 6.0.

## 2. Business Organizations (Associations, Chambers)

Chart 2.1 summarizes the business assessments of the utility of all the bridges between labor supply and demand.

**Chart 2.1: Summary of business assessments**

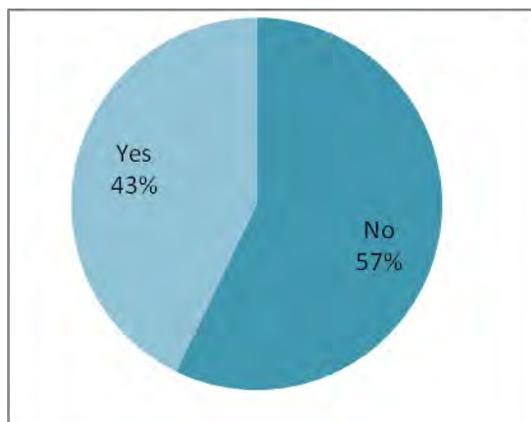


On the 10-grade assesment table, the businesses evaluated the system as just above average – 5.5. The self- assesment of the universities was nearly 6.2, colleges – 5.2, and VET schools – 4.9.

The sample is too small to provide information on business assesment of different levels of education institutions. However, businesses’ answers to some of the questions differ substantially from the self-evaluation of the educational institutions.

### Employability programs

Only 43% of surveyed business organizations agreed that universities, colleges or schools approached them to find jobs for their students and graduates. The answer to the same question from the educational institutions is that more than 87% approached business organizations to find jobs for their students and graduates – a major difference.



**Chart 2.2**

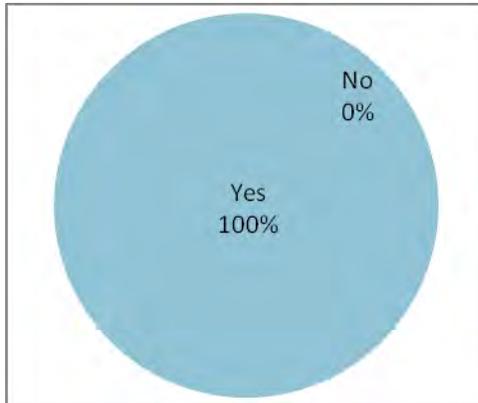
**Question 1. Do schools / colleges /universities approach you (a business) when they assist students and graduates in finding jobs?**

The average utility grade of those business organizations which answered “Yes” is only three. This is the second lowest average quality grade from the business side.

### Graduates’ participation in company projects

**Chart 2.3**

**Question 2. Do you accept school/college/university undergraduates to participate in your company’s operations?**



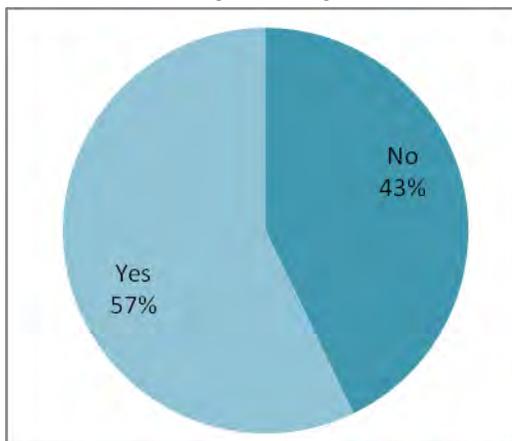
All business organizations and chambers answered that they had university undergraduates participating in their operations. However, when they assessed the quality of this cooperation, the average was 4.7 - less than half of the best grade and representing the third lowest average. Only two out of seven business organizations gave high grades (8 and 10) for the quality of this participation. For the remaining five organizations, the “Yes” responses were just 3.

### Internships

The majority of business organizations and chambers answered affirmatively regarding utilizing interns in their organizations. Forty-three percent of the surveyed do not use interns. For those who answered Yes, the average rating was 5.3.

**Chart 2.4:**

**Question 3. Do you accept interns?**

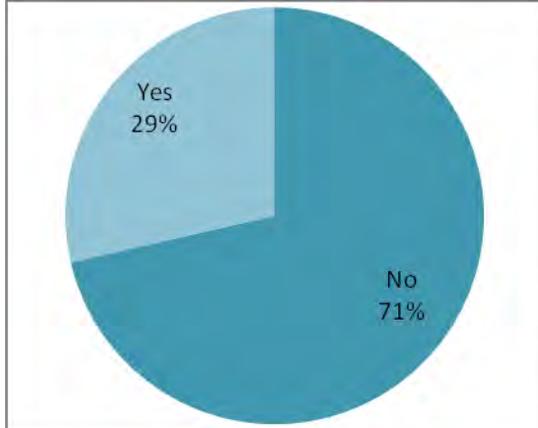


### Business participation in curricula development

Only 29% of the respondents indicated that they have participated in development of school/college/university curricula. The overwhelming majority of the surveyed organizations answered negatively. Similarly is the percentage of bridges available in the next two instances – the invitation of educational professionals as consultants and of business executives to teach.

**Chart 2.5**

**Question 4. Do you participate in school/college/university curricula development for professions your company would need?**



However, the average grading of the positive answers was somewhat higher at 8 points (see chart 2.1).

#### Teachers and professors as consultants

The majority of the surveyed business organizations stated that they do not invite teachers and professors to work as consultants or as part time contractors. Only 29% answered positively. The average grading of the Yes answers is 5.

#### Business professionals as teachers

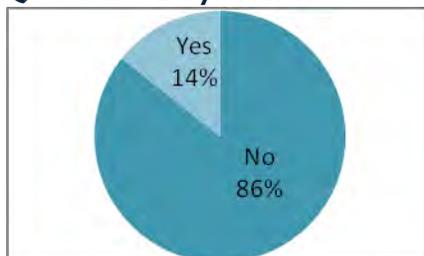
The majority of respondents (71%) answered that they are not being invited to teach and train in schools and universities that educate in professions needed by business organizations. However, the average ranking of Yes answers is 9.5.

#### Financing courses and R&D

The overwhelming majority of the surveyed business organizations answered negatively about financing courses and R&D at schools, colleges and universities. Only 14% said that they have provided such support.

**Chart 2.6**

**Question 7. Do you finance courses and R & D at schools/universities?**



The average grading of Yes answers was 2 points. Meanwhile, it should be noted that 29% of the colleges and 46% of the universities stated they have courses financed by the private sector.

### Joint events

The fact that all the surveyed business organizations confirmed that they have participated in such events may mean that there are regular attempts to improve institutional linkages.

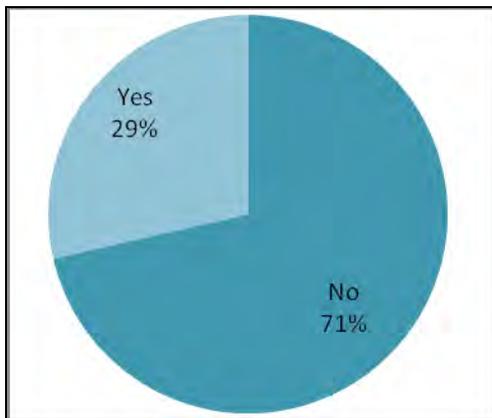
The average of the Yes answers is 5.1; only two business organizations provided a grade higher than 5; the remaining five rated it 3.6.

### Participation in evaluation

The majority (71%) of surveyed business organizations answered that they do not participate in the evaluation of the quality of education and curricula for professions they need. Only 29% of the respondents answered Yes to this question. However, when participation takes place, its utility is assessed slightly above average - 5.5.

**Chart 2.7**

**Question 9. Do you participate in the evaluation of the quality of education and curricula provided for professions you may need?**

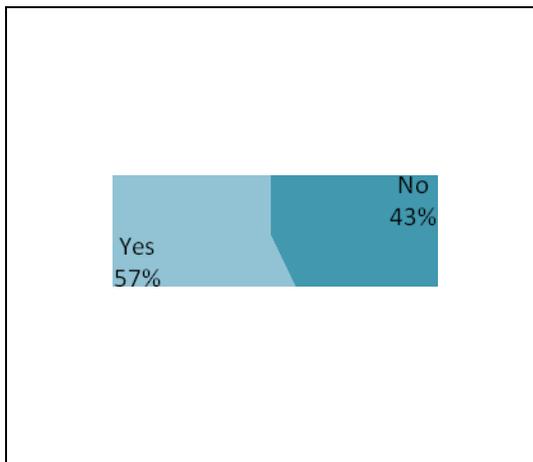


### Dual Careers

The majority (57% - considerably less than what is declared by colleges and universities) of the surveyed business organizations stated they have dual careers in their companies. The average quality is assessed at 6.8 points.

**Chart 2.8**

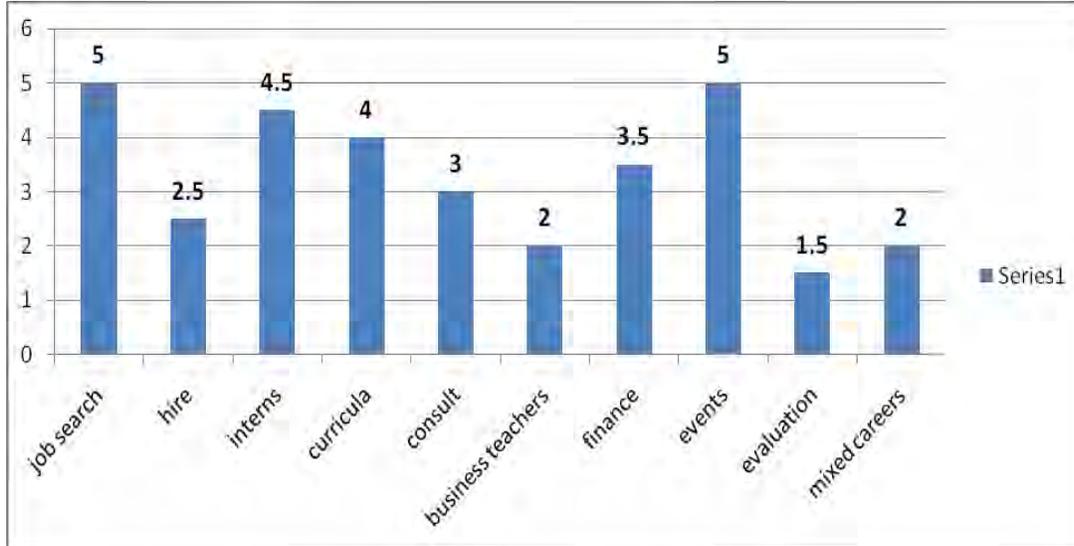
**Question 10. Are there joint/dual careers in your company, meaning do teachers/academics work on longer term basis in businesses and entrepreneurs in academia?**



### 3. Reference group assessments

The reference group was asked to assess the overall situation in the country.

**Chart 3.1: Assessment of the situation in the country (the reference group)**



There is no assessment criteria that graded higher than 5 points, and the overall evaluation score was 3.3; most particularly the assessment scores for bridging factors such as keeping alumni involved, participation of business professionals, enterprise professionals as teachers, trainers, and dual careers, are low.

**Table 1: Summary assessments of all categories of respondents**

	employability	alumni	interns	curricula	consultancy	executive	financing	events	Testing	mixed career
<b>Educational institutions</b>										
VET schools	6.0	5.7	6.7	4.6	4.0	6.7	0.0	6.0	4.5	5.0
Colleges	6.3	6.0	7	3.7	5.7	6	4.5	6	4	3.4
Universities	5.7	5.9	6.2	8	6.2	6.8	5.2	5.3	6.3	6
Business	3.7	4.7	5.3	8	5	9.5	2	5.1	5.5	6.8
Reference group	5	2.5	4.5	4	3	2	3.5	5	1.5	2

### Conclusions from the questionnaire and interviews

#### Comparison of answers of businesses and educational institutions

There is a clear discrepancy between the answers given by educational institutions and business organizations and by the reference group and impressions from face-to-face interviews.

Universities, colleges and VET schools are generally more optimistic regarding the quality of the bridges and rate their effectiveness much higher than do business respondents. The enterprises

are on the user-end of the system and are rather pessimistic. The reference group is even more pessimistic.

On one hand, about 80% of VET schools and colleges and 100% of universities indicated that they help their students to find jobs; on the other hand, about 60% of the surveyed business organizations answered that educational institutions do not approach them when searching for jobs for their students.

Additionally, 90-100% of the educational institutions answered that they have easily accessible and popular internship programs. All business organizations stated that the students take part in their projects and programs but only 57% of them take interns. Business organizations' evaluation of internship programs are 1-2 points below the self-evaluation of educational institutions.

Another significant discrepancy is indicated by the answers to the question on the private sector's participation in curricula development: 78% of the VET schools and 43% of colleges answered positively; but only 30% of private sector respondents indicated that they were involved in the process. Overall:

- It appears that the high self-evaluation of the universities, colleges and schools should be corrected downwards by at least one point; this correction comes from the evaluation of the reference group and the businesses as end-users of skill and qualifications supplied by the educational system;
- Thus, the overall utility of the informational bridging factors used by different segments of the education system is as follows;
  - a. VET schools: between 3 and 4 points;
  - b. Colleges: between 4 and 5;
  - c. Universities: between 5 and 6.

### Core impressions from face-to-face interviews

- Both the VETs, colleges, universities and businesses confirmed that there is some degree of cooperation between them but that its utility is very low. For example, the interviewees from the educational institutions found it far from easy to find internships with businesses; spots are limited while demand is very high. It was mentioned that some businesses were not even willing to take interns, considering them a burden, useless, etc. The complaint was that often businesses send interns back home, asking them to show up just to sign the necessary documents. On the other hand, businesses believe that the students are not interested in working with them, but only wanted documented proof that they have successfully passed the internship. An interviewee stated that when jobs are offered, students most often would refuse, reasoning that they would either start their own company or that they were looking for a position in management.
- All VET schools were interested in having a career center or a staffer to identify potential internships, jobs, and to do anything necessary to enhance their students' employability. None of them have such services at the moment.

- VET schools and universities do not provide any short term training programs.
- VET schools governing councils, according to one of the interviewees; do not function properly because members (especially those representing employers) are not selected locally.
- VET schools also state that they receive mandated standards but cannot find or develop relevant training materials themselves.
- Businesses reported that an important problem with educational institutions is that they are still using Soviet-era professionals and that the lectures given are often outdated.
- Businesses do not trust educational institutions and they believe that the educational system is corrupt and essentially incapable of producing qualified professionals.

## 4. Evidence of mismatch

### Employment turnover

One of statistical indicators for a mismatch between labor demand and supply is the turnover of employment. The latest NSS data on the subject is for 2010; the 2008-2010 figures are shown in Table 2; they reflect a time period of one year before the crisis and one year after 2009 when the economy contracted by 14.1%.<sup>7</sup>

The employment turnover refers to the percentage of those fired and/or hired of those employed full time. It is one of the very few NSS data relevant for monitoring labor demand and supply. At the same time, Armenia seems flexible in terms of restriction to hiring and firing workers.<sup>8</sup>

The Table below shows that hiring and firing rates for the country as a whole and in the industrial sector remain roughly unchanged over a period of domestic and global economic instability. It seems that every fifth worker in the country and every fourth in its industrial sector are subject to losing his/her job once a year. The agrarian and construction sectors, where the economic slowdown was particularly acute, demonstrate a greater dynamic.

**Table 2: Employment turnover (2008-2010, medium and large enterprises)**

Hired/Fired, in general and by selected sectors	2008	2009	2010
(% of active workforce)	<b>Overall</b>		
Hired	20.8	18.5	20.4
Fired	20.1	18.3	18.7
	<b>Industry</b>		
Hired	28.4	25	27
Fired	32.9	26.7	25
	<b>Agriculture</b>		
Hired	49.4	42.4	66.7
Fired	37.5	35.1	63.4
	<b>Construction</b>		
Hired	65.6	71.5	89.6
Fired	67.6	73.1	83

Source: NSS

However, this situation may be a result of many factors.

According to one of the most reliable databases (“Enterprise Surveys” - 2009) Armenia’s position looks rather favorable in terms of workforce education not being identified as a

<sup>7</sup> EBRD Office of the Chief Economist Regional Economic Prospects in EBRD Countries of Operations, October 2011, p. 16; available at: [http://www.ebrd.com/downloads/news/REP\\_October\\_2011\\_181011\\_Final.pdf](http://www.ebrd.com/downloads/news/REP_October_2011_181011_Final.pdf) .

<sup>8</sup> In the latest WEF Global Competitiveness Report (2011-2012) Armenia is in 18th place out of 142 countries in the world on this indicator (see: see p. 101 of the Report at: <http://reports.weforum.org/global-competitiveness-2011-2012> ); Economic Freedom of the World Network (led by the Fraser Institute) gives Armenia a similar rank, see: Economic Freedom of the World 2011 Annual Report, p. 30 (data for 2009), available at: [http://www.freetheworld.com/2011/reports/world/EFW2011\\_chap2.pdf](http://www.freetheworld.com/2011/reports/world/EFW2011_chap2.pdf) .

significant problem: in 2009 it was believed to be a problem for 22.8% of the firms, while this indicator for Europe and Central Asia was 30.7% and 27.4% for the world. The same found that the percentage of permanent full-time employees that have received formal training (this is an indicator relevant for manufacturing firms) was the same as that reflected in the NSS data for the industrial sector – 25%.<sup>9</sup>

Employment turnover could result from relatively short time horizons for planning enterprise operation or there could be a correlation with the fact that that in Armenia, the number of full-time workers is 38.9 - about 10% lower than the average for Eastern Europe and Central Asia and the world.<sup>10</sup> For the lack of more detailed data and analyses, we assume the NSS employment turnover data point to be a problem that shall be further analyzed and addressed.

### ***Education institutions and private sector students***

In Armenia medium- and large-scale companies report to NSS the number of workers trained on the job or at VET institutions funded by the companies themselves.

In Armenia in 2009, the number of firms<sup>11</sup> offering formal training to employees was lower than in Eastern Europe and the Central Asia region - 30.4% compared to 33.9 and 35.4% respectively.<sup>12</sup> This corresponds to the above mentioned BEEPs 2009 findings. But, again, the causality is not immediately evident.

It may be caused by multiple factors, some of them general: the level of competition in the economy, the disposable company resources or tax regulations.<sup>13</sup> Furthermore, there are many labor market peculiarities. The number of full-time employees in Armenia is lower by the same percentage as the number of firms offering formal training.<sup>14</sup> Also, the proportion of unskilled workers is significantly higher: 42.1% in Armenia, 24.6% in the region, and 32.6% in the world.

The relatively high proportion of unskilled workers among the employed workforce is associated with the relatively low-skilled orientation of the Armenian economy. Thus, many jobs are low-skilled in nature, so the issue of labor force qualifications does not represent, for most employers, a binding constraint given the current structure of the economy. This is not implying that the current level of qualifications is constraining the economy from moving towards high value-added industries/jobs, and that such upgrading is not taking place as we speak.

In fact, perhaps, both the statistics and surveys such as ours point at such a process.

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<sup>9</sup> See: <http://enterprisesurveys.org/Data/ExploreEconomies/2009/armenia#workforce> .

<sup>10</sup> See: <http://enterprisesurveys.org/Data/ExploreEconomies/2009/armenia#workforce> .

<sup>11</sup> Note that the indicator is not the same as data reported to NSS (number of employees trained at the expense of the companies).

<sup>12</sup> See BEEPs: <http://enterprisesurveys.org/Data/ExploreEconomies/2009/armenia#workforce>. In the BEEPS methodology “formal education” means education of full-time workers in professional schools, colleges and universities and received a certificate.

<sup>13</sup> The current tax allowance for retaining employees is: up to 4% of the company’s revenue before tax, but not more than AMD 3 mln. (USD 7.800) per employee trained outside the country and up to 1% of the company’s revenue before tax but not more than AMD 1 mln. (USD 2.600) for in-country trainings.

<sup>14</sup> BEEPs, *Ibidem*; in the same year the percentage of workers receiving formal training is also lower than in the region and the world: 25.3% versus 33.7% and 46.9%.

In 2009, the situation was characterized by less formal training in terms of workers trained, and more apparent satisfaction with labor force qualifications in terms of international comparison of companies offering training. It is possible to expect that the situation is changing - in 2010 the number of trained workers increased by nearly 27%.

**Tables 3: Number of VET Training Receivers by Training Venue**

	Total, persons			
	2007	2008	2009	2010
<b>Trained, total</b>	<b>9610</b>	<b>9498</b>	<b>11977</b>	<b>16411</b>
<b>Of them</b>				
In an educational institution	1598	2762	2686	3559
In the workplace	7273	6237	8709	12090
Abroad	739	499	582	762

Source: Labor market in Armenia, 2011, NSS.

Between 2007 and 2010 the number of individuals receiving vocational training at the employers' request increased by 41%. In the same period those trained on the job increased by the same, 40%. The number of workers sent to educational institutions grew by 55%, but the number of workplace trainees was consistently three times higher than the number of those trained in VETs.<sup>15</sup>

On the supply side we see that the number of VET institutions is also rising. From 2008-2009, the number of VET schools increased from 28 to 46, while the number of colleges remained practically unchanged.<sup>16</sup> According to the latest NSS data there are about 111,000 university students, 27,600 college students and 6,600 trainees in VET schools, and 144,600 students/trainees altogether. In 2011, workers trained in educational institutions represented 11.3% of all students in the country; those trained on the job accounted for 8.4% of all students/trainees.

The fact that on-the-job trainings grew somewhat faster than the number of those trained in VET institutions should be interpreted as evidence that in Armenia, trainability is not equivalent to education. In Armenia, uneducated workers can achieve best practice and educated ones often do not. Such conclusions have been made by William W. Lewis, who is a founder and

<sup>15</sup> We should note that the Ernst & Young 2011 (published on February 25) General Industry Compensation and Benefits Survey found that "in contrast to other CIS countries, where with the hit of the financial crisis the companies shifted towards a higher proportion of internal trainings, Armenian companies indicated a higher percentage of external versus internal trainings financed by the companies": the average reported proportion was 0.7 versus 0.48 respectively." This may be an indicator of an increased demand for qualified labor but not of a basic shift in the pattern of company behavior.

<sup>16</sup> At the end of November 2011, The National Centre for Vocational Education and Training Development (NCVETD) lists 34 VET schools; it is not clear what this difference means; perhaps a process of consolidation is taking place and NCVETD has reflected this situation for the 2011-2012 school year, the list is available at the Center's website: <http://www.mkuzak.am/am/education/> (the source is in Armenian).

CEO of the McKinsey Global Institute and partner at McKinsey & Co. He observed this phenomenon for about 20 years in thirteen countries.<sup>17</sup>

The fact that on-the-job training can be a very important factor in determining worker productivity is not new. In market economies, however, higher levels of academic achievement are associated with higher levels of labor productivity and higher remuneration. In a transitional economy like Armenia, with high unemployment and underemployment rates, academic training may not be immediately relevant or, simply, may constitute a luxury that cannot be easily afforded.

The data on employment turnover and private sector financing of VET programs should be interpreted jointly. Despite the efforts and increased numbers of on-the-job trainees, turnover rates remain at a relatively high level. It remains to be seen whether the last increase in 2011 in trainee activity will make a difference in 2012.

For the time being, the impression of a basic supply/demand mismatch remains unchanged. This is in fact, well documented over years by the Global Competitiveness Report (GCR).<sup>18</sup>

In this regard, the country ranks 92nd out of 142 countries in the 2011-2012 rankings. It is reasonable to assume that educational processes that rank considerably higher help ease labor supply/demand mismatch, and vice-versa.

**Table 4: Education processes and levels (ranks)**

Education processes and levels	Rank (1 – best, 142 – worst)
Secondary education enrollment, gross %	52
Tertiary education enrollment, gross %	49
Quality of the educational system	97
Quality of math and science education	81
Quality of management schools	131
Internet access in schools	92
Availability of research and training services	114
Extent of staff training	105

Source: WEF, op. cit.

Four out of the eight indicators in the WEF's 5th Pillar (Higher Education and Training) are identified by business executives as problematic. These include the following:

- The overall quality of the educational system;
- The extent of staff training;
- The availability of research and training services;

<sup>17</sup> William W. Lewis, *The Power of Productivity: Wealth, Poverty and the Threat to Global Stability*, The University of Chicago Press, 2005, pp. 243, 245; the author continues: "in every economic sector in developing countries, there is a reasonably wide range of productivity across firms. The most important evidence is from firms that achieve productivity much higher than the industry average. Sometimes this productivity is even close to best global practice. These examples indicate that the local labor forces are capable of achieving much higher labor productivity than they do now. However, other factors have to be fixed for them to do so" (Ibidem).

<sup>18</sup> This part of the GCR is based on Business Executive Surveys conducted by World Economic Forum partners in Armenia.

- The quality of management schools.

## Youth unemployment in other countries and Armenia

### Worldwide Experience

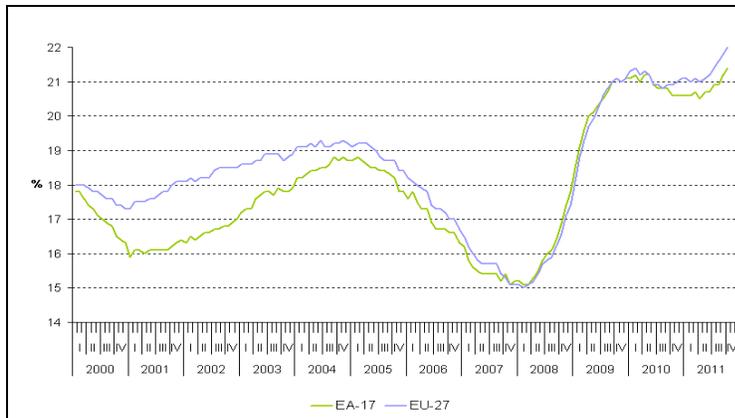
The unemployment situation for youth may be used as another indicator of the labor market mismatches. Before reviewing the relevant data for Armenia, we should note that the majority of developed and developing countries demonstrate the following characteristics:

- Youth are 50-100% more likely to be unemployed in comparison to older, mid-career work-force participants (see Chart 4.2 below);
- In the third quarter of 2011, unemployment in the UK was at its peak – 8.3% but that of youth (16-24 years of age) – was 21.9% of the active youth labor force;<sup>19</sup>
- Similarly, according to EUROSTAT, in the same period youth unemployment in Spain was 44% while the economy-wide average was 22%; in Bulgaria the comparative figures were 23.2% vs. 12.1%; in Greece 42.9% vs. 18.3%; in Latvia 30.2% vs. 15%; in Estonia 32.9 vs. 11.3%; in France 23.3 vs. 9.8%; and in Slovakia 32.7 vs. 13.6%.

As the following chart shows there is practically no difference between Euro zone area (EA) and the European Union (EU) as a whole in terms of youth unemployment rates.

**Chart 4.1**

**Youth unemployment rates, EU-27 and EA-17, seasonally adjusted, January 2000 - October 2011**

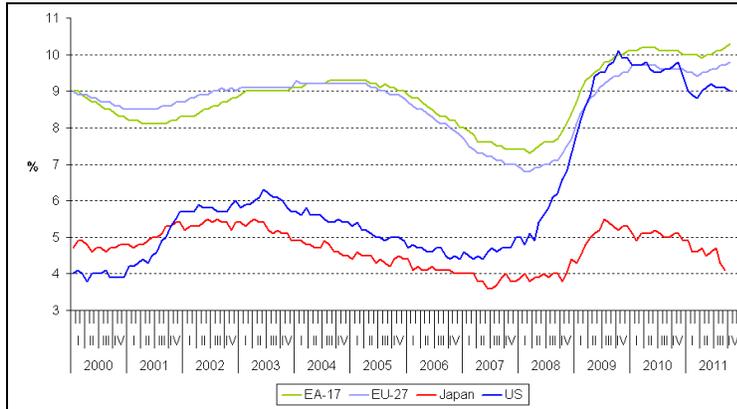


Source: EUROSTAT

In the EU, the Euro zone and the United States, the youth unemployment rate is typically two times higher than the overall unemployment rate, especially after 2008.

<sup>19</sup> See UK Office of National Statistics 2011 Bulletin: [http://www.ons.gov.uk/ons/dcp171778\\_241735.pdf](http://www.ons.gov.uk/ons/dcp171778_241735.pdf).

**Chart 4.2**  
**Unemployment rates: EU-27, EA-17, US and Japan, seasonally adjusted, January 2000 - October 2011**



Source: EUROSTAT

The most recent global data from the ILO puts youth unemployment at 12.6% (down from 12.8% in 2009); while by comparison for the non-EU and the former Soviet Union, it is about 20% on average.<sup>20</sup>

### Armenia

Armenia’s situation is idiosyncratic in this regard.

In 2009 and 2010 the youth unemployment rate was 48.1 and 40.95%, respectively (among 15 to 19 year olds – 59.9 and 44.4%). For the overall developed world in general, the youth unemployment rate is twice as high as the average unemployment, and in Armenia it is two and a half times higher.<sup>21</sup>

The overall youth unemployment rate fell in 2009-2010 for regulatory reasons – the schooling period was expanded from ten to eleven years; according to regulatory norms, in 2011 it will increase to twelve years. Thus, the 2011 youth employment rate can be expected to decline again for 15-19 year-olds.

Equally important, is the group of 20-24 year olds, for whom the unemployment rate increased from 36.2 to 37.5%.<sup>22</sup> For this group, the unemployment in Armenia is 50% worse than for Eastern Europe (non EU) and the former Soviet Union and almost three times worse than the youth unemployment globally in 2010. The ILO has thus concluded that: “the low youth employment rate shows that the economy does not create enough jobs for young persons wishing to enter the labor market, at least in the formal economy.”<sup>23</sup>

<sup>20</sup> Global Employment Trends 2011, Executive Summary, ILO, 2011, pp.3, 4.

<sup>21</sup> Source: Integrated Living Conditions Survey (ILCS) 2009- 2010, NSS, 2011.

<sup>22</sup> Source: Integrated Living Conditions Survey (ILCS) 2009- 2010, NSS, 2011. For details: see Attachment 2.

<sup>23</sup> Youth employment in Eastern Europe: Crisis within the crisis, A background paper for the Informal Meeting of Ministers of Labour and Social Affairs during the 100th Session of the International Labour Conference, ILO, Geneva, 15 June 2011, p. 5.

### **Qualified labor: regular gaps identified by the World Bank**

In October 2011, the World Bank survey on skills and education in New Europe and Central Asia<sup>24</sup> concludes that, irrespectively the dynamism of the transition from planned to market-based economy, there are distinct labor market adjustment patterns which have emerged, most particularly:

- The demand for skilled labor has risen;<sup>25</sup>
- Job creation is higher on average in occupations characterized by higher qualifications;<sup>26</sup>
- Relatively higher wage premia are found for university and college graduates;<sup>27</sup>
- Lack of skills hampers enterprise growth potential, as perceived by employers;<sup>28</sup>
- Skills mismatches are persistent, as measured by the time needed by firms to hire specific categories of workers.<sup>29</sup>

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<sup>24</sup> The Survey results were first announced in Yerevan, in October 2011. The book has become available in November, see: Lars Sondergaard and Mamta Murthi, with Dina Abu-Ghaida, Christian Bodewig, and Jan Rutkowski, *Skills, Not Just Diplomas: Managing Education for Results in Eastern Europe and Central Asia*, Washington D.C., The World Bank, 2012.

<sup>25</sup> *Ibidem*, p. 22.

<sup>26</sup> *Ibidem*, pp. 24-26; conf. also the following observation: "The typical pattern of change in occupational structure has included (1) a substantial fall in demand for agricultural skills, (2) a fall in demand for manual labor, both skilled and unskilled, (3) a rise in demand for service sector occupations, and finally, (4) a surge in demand for professional skills.

<sup>27</sup> *Ibidem*, pp.35-37.

<sup>28</sup> In Armenia this perception is shared by 20-30% of the employers, as measured by BEEPS 2008 Survey, *ibidem*, p. 38.

<sup>29</sup> *Ibidem*, p. 40 (BEEPS 2005 Survey).

## Overall conclusions and recommendations

### Conclusions

Workforce competitiveness refers to a system that enables individuals and enterprises to develop labor market-relevant knowledge and skills for enhanced work productivity in specific occupations. The system is driven by the opportunities for businesses to enhance profitability and effectively share and satisfy their demand for scarce labor market skills<sup>30</sup>.

The system of communication between education and businesses uses all standard channels. The level of satisfaction is below the medium score; the utility of the bridges existing at university level is graded average 5 on a 10-score table and for colleges and VET schools it is lower than that. The overall quality of the communications with businesses is 3.5 points for VET schools, 4.5 for colleges, and 5.5 for universities. The challenge is to better their utility of the information exchange.

Another key problem is the level of trust in the system. On the one hand, VET schools and universities complain that the businesses are not interested in cooperating. On the other hand, businesses express dissatisfaction that the system does not produce needed specialists. The statistics on employment turnover and workforce training seem to confirm that the trust deficit is persistent. Youth unemployment performance underscores a similar problem, but recent educational reforms may have an impact on the observed unemployment rates. It is no accident, however, that WEF interviewees rate the entire education system relatively as poor.

The labor market supply/demand coordination system is inefficient and is correctly perceived as such. In this regard the following statistical evidence is relevant;

- a) The previously referenced relatively high level of turnover of employment, irrespective of external factors (e.g. disregarding the global crisis);
- b) In 2007-2010 the number of individuals receiving vocational training at an employer's request (and payment) in educational institutions and through on the job training increased by roughly the same percentage - 41% and 40% respectively, while a larger number of VET schools actually reduced the provision of on-the-job training activities;
- c) In 2009, the GDP declined by roughly 15%, but the basic pattern of educational activities did not change. From 2007-2011, the number of schools increased and the number of workers sent by employers to educational institutions increased but the

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<sup>30</sup>Conf.: Jee-Peng Tan, Robert McGough and Alexandria Valerio, Workforce Development in Developing Countries: A Framework for Benchmarking, World Bank, January 2010, p. 2., see: [http://siteresources.worldbank.org/EDUCATION/Resources/278200-1290520949227/WfD\\_Benchmarking\\_Framework.pdf](http://siteresources.worldbank.org/EDUCATION/Resources/278200-1290520949227/WfD_Benchmarking_Framework.pdf)

number of the workplace trainees was consistently three times higher than the number of those trained within institutions;

- d) By international standards, Armenia has a relatively high rate of youth unemployment, which is especially visible in the subgroup of 19-24-year olds; the inefficiency of the informational bridging mechanisms between business and education is presumably most important for this group; we expect, however, that the statistics will soon demonstrate a statistical improvement, reflecting the longer mandated enrollment period for high school.

## **Recommendations**

We recommend that future assessments of the system be conducted regularly, that the results are compared with statistics information, and the statistics information is gradually improved. There is clearly a need for a greater say of businesses in determining training priorities for increased competition between the educational institutions and improved flexibility and responsiveness of the educational system.

### Upgrading bridges between labor supply and demand

#### *Employability*

The employability, alumni and internship factors (the first three of our “bridges”) are best viewed jointly. These factors serve both to indicate the private sector’s willingness to invest in the education system, and also its perceived incentives for doing so. In this regard, all universities claim that they assist students finding jobs, but one-quarter of them lack alumni programs and one-tenth lack internship initiatives, while the overall impact of these programs is roughly 50-60%. This is an indication that:

- a) future graduates are not fully engaged by their institutions in the search for competitive careers, and in a significant number of cases the effort remains informal;
- b) the most basic links to private sector that allow gaining experience and selling one’s own capacities is missing for a significant segment of the system.

Obviously, in the educational institutions where these programs are missing, the most pressing need is to create them. In those institutions where the programs’ quality is found unsatisfactory, core efforts should be directed towards identification of specific deficiencies and priority actions to address them.

The methodology and the questionnaires used in this report can be used for self-evaluation of schools, colleges and universities, and/or for regular reviews of the efficiency of the system. The relevant GOA bodies have already put the policy framework in place. Now is the time for academic and private sector institutional actors to step in.

A system to evaluate and rate universities and colleges is still missing and MOES understands that it is vital for boosting competition and providing key criteria for public funding. We recommend that the creation of such system is outsourced to a private entity, selected with the consent of the rectors. This approach was used in some Eastern European transitional

economy countries, and in some instances the creation of the system was financed by private and public donors.

Last but not least, the internship programs can be influenced by key regulatory framework factors including: the labor code definition of voluntary labor, tax regulations, etc. In this regard EDMC plans to analyze detailed labor market regulatory constraints, but we recommend as well, a general discussion on these matters that involves GOA bodies, academia, and chambers and guilds.

#### Private sector involvement

The remaining bridges should be interpreted as mechanisms for improving employability and the quality of informational exchanges between the demand and supply sides of the labor market.

Key initial recommendations in this area include the following:

- Colleges and universities should increase the participation of employers in curricula development and in testing the “output” of the system.
- It is common practice for university faculty members to work as consultants, though their quality is generally assessed as low by those who pay for it. We believe in this regard that educational institutions should consider attempting to increase the usage of professors as consultants, and vice-versa, as a means to address remuneration and institutional finance issues, and to promote greater student involvement in consulting projects. In this regard the latest assessment of labor informality indicates that informal labor in education is less than 7%.<sup>31</sup> This appears to underscore the limited utilization of consulting professionals as teachers. A fundamentally important way to address business dissatisfaction with course quality is in fact to invite business professionals to teach courses at educational institutions.
- The regulatory frameworks (tax code and fiscal regulations), practical arrangements, and institutional initiatives to allow for private sector participation in financing schools, colleges, and universities, should be the subject of a separate analysis. As far as we can judge, the current fiscal framework appears to be sufficiently flexible, but our survey indicates there are problems with both the availability of privately financed courses and R&D, and with the quality of organizing such courses and programs.

#### **Follow up**

EDMC will assist Armenia to overcome critical skills constraints through the following key activities:

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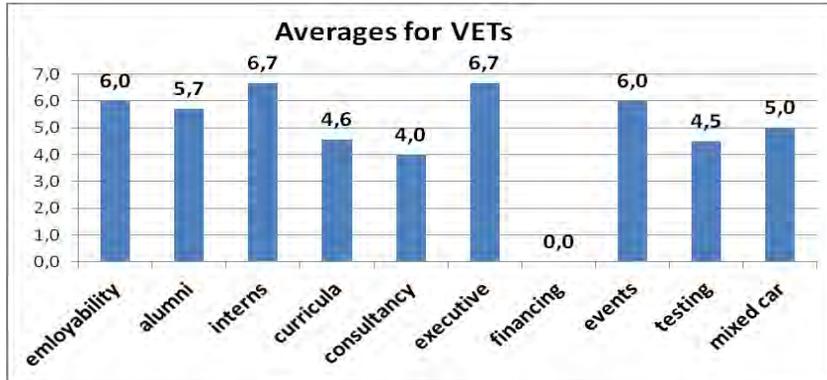
<sup>31</sup> See: ADB, NSS, The Informal Sector and the Informal Employment in Armenia, 2010, p. 44. The ADB (and ILO) methodology of measuring informal labor is based (among other details) on counting second, temporary contracts. Presumably, such contracts are normal practice. The policy of using them should be left to universities/colleges' discretion and the best practice is not to punish their utilization through fiscal disincentives.

1. Conduct a periodic, focused survey of both employers and selected VET schools to assess: (a) the relevance of training courses/materials to employer needs, and (b) the coherence/efficiency of institutional feedback mechanisms between employers and training institutions in EDMC's selected sub-sectors.
2. Review labor market conditions in these sub-sectors.
3. Work with businesses from those sub-sectors and relevant educational institutions to improve the density and quality characterizing the information flow between the supply and demand sides of the labor market for these sub-sectors. This will include providing information on linkages between labor market supply and demand to VET schools, businesses and policy makers, including the following possible types of information: model curricula and training materials; assessment of skills in demand by various sectors in the economy; openings in companies for short-term and long-term employment and internships; and skills requirements in various sectors.
4. Work with relevant educational institutions to increase their contacts with the private sector, to improve their understanding of the skills demanded by the labor market, to improve cooperation in curricula development, and also to improve their capacity to place students in internships, for part-time jobs during their time in school, and for permanent jobs after completion of their programs.
5. Initiate a comprehensive revision of curricula in select VET topics consistent with business needs. This should include guidelines and principles, model study plans, and targeted training programs for teachers.
6. Work with selected institutions to develop or improve short-term and pilot courses that address business needs, through curriculum development and targeted training of teachers.
7. Work with VET schools to greatly increase their emphasis on employment for students, of all kinds: paid and unpaid internships, summer employment, and part-time jobs, including work related and unrelated to areas of study.
8. Review of applicable laws and regulations that might impede participation of the private sector in curriculum development, teaching and/or internships and the hiring of students for part-time jobs while they are studying, and propose revisions.

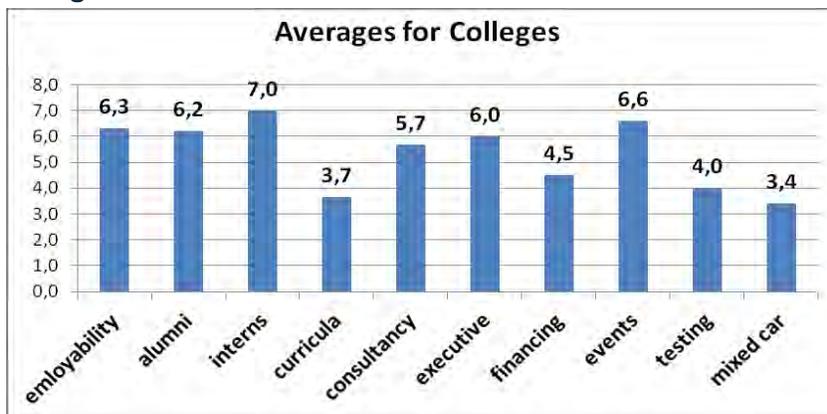
## Appendix I

### Averages for educational institutions

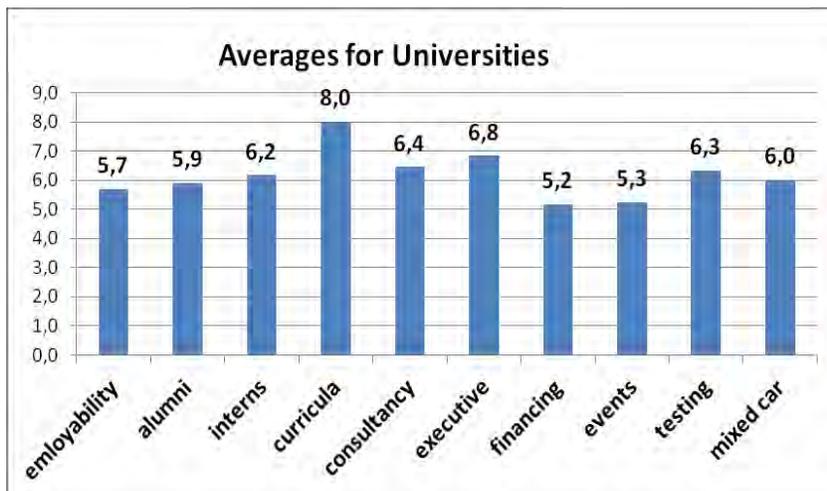
#### VET schools



#### Colleges



#### Universities



## Appendix 2. Questionnaires on bridges between business and education

### **Schools / colleges / universities questionnaire**

The purpose of this questionnaire is to understand whether VET schools, colleges and universities make attempts to increase the employability of their students though adjusting their knowledge and skills to what is needed by businesses.

Below we list several means of matching supply and demand for useful qualifications. We ask you to answer “yes” or “no” as to whether the mechanism in question exists or not, and if the answer is “yes” to grade it in terms of quality (usefulness for the students, graduates, the school or the university).

The answers will be summarized and used to deliberate on what is needed to improve the cooperation between businesses and educational institutions. Only aggregated data will be used. This questionnaire can be applied also for self-evaluation.

	<b>Opportunity</b>	<b>No</b>	<b>Yes</b>	<b>Quality “yes” (1-poor – 10 excellent)</b>
1	Are there programs to assist students in finding jobs?			
2	Is there participation of those who graduated in other school/colleges/university programs and projects?			
3	Are there easy and popular internship practices?			
4	Is there private (enterprise) sector participation in curricula development?			
5	Do teachers and professors work as consultants and on part-time contract with businesses to help themselves and schools/colleges/universities?			
6	Are there courses/ trainings by and for business executives?			
7	Is there private (enterprise) financing of courses and R & D?			
8	Are there joint events attended by both teachers/academics and businesses?			
9	Are businesses involved in the evaluation of education (and curricula) quality?			
10	Are there dual/joint careers: teachers/academics who work on a longer term basis in businesses (enterprises) and entrepreneurs in academia?			

## 2. Business chambers and guilds questionnaire

The purpose of this questionnaire is to understand whether VET schools, colleges and universities make attempts to increase the employability of their students though adjusting their knowledge and skills to what is needed by businesses.

Below, we list several means of matching supply and demand for employable qualifications. We ask you to answer “yes” or “no” as to whether the mechanism in question exists or not, and if the answer is “yes” to grade it in terms of quality (usefulness for the students, graduates, the school or the university).

The answers will be summarized and used to deliberate on what is needed to improve the cooperation between businesses and educational institutions. Only aggregated data will be used. This questionnaire can be applied also for self-evaluation.

	<b>Opportunity</b>	<b>No</b>	<b>Yes</b>	<b>If “yes” – how useful the cooperation is (1-not at all – 10 absolutely)</b>
1	Do schools / universities approach you when they assist students and graduates finding jobs?			
2	Do you ask school/university undergraduates to take part in your company and/or association operations, programs and projects?			
3	Do you accept interns?			
4	Do you participate in school/colleges/university curricula development for professions your company/guild would need?			
5	Do you (your organization) invite teachers and professors to work as consultants and on part-time contract?			
6	Are you (members of your organization) invited to teach and train in schools/universities that educate professionals you may need?			
7	Do you (members of your organization) finance courses and R & D at schools/colleges/universities?			
8	Do you take part in events attended by both teachers/academics and businesses?			
9	Do you participate in the evaluation of education (and curricula) qualities for professions you may need?			
10	Are there dual/joint careers in your company, meaning do teachers/academics work on a longer term basis in businesses and entrepreneurs in academia?			

## **Appendix 3. Surveyed and interviewed organizations**

### ***List of surveyed organizations***

#### **VET schools**

1. Yerevan #1
2. Gyumri #4
3. Ashtarak
4. Echmiatsin I
5. Sevan
6. Vanadzor #1
7. Abovyan #1
8. Qajaran I
9. Berd I

#### **Colleges**

10. Yerevan State Trade and Service College
11. Yerevan State Engineering College
12. Talin State Craftsmanship College
13. Vanadzor State Technological College
14. Hrazdan State College
15. Kapan State Trade and Service College
16. Yeghegnadzor State College

#### **Universities**

17. Yerevan State University
18. European Regional Academy of Caucasus
19. State Engineering University of Armenia
20. State Economics University of Armenia, Gyumri
21. Echmiatsin Grigor Lusavorich University
22. Gavar State University
23. Vanadzor Mkhitar Gosh International University
24. Hrazdan Humanitarian Institute
25. Goris State University
26. Yeghegnadzor Giteliq University Foundation
27. American University of Armenia
28. Russian Armenian (Slavonic) University
29. French University

#### **Business Organizations and Chambers**

30. The American Chamber of Commerce in Armenia
31. Chamber of Commerce and Industries of RA (headquarters)
32. Chamber of Commerce and Industries Gegharkunik
33. Chamber of Commerce and Industries Lori
34. Chamber of Commerce and Industries Kotayk
35. The Union of Manufacturers and Businessmen (Employers) of Armenia
36. Shirak Competitiveness Center

**Reference group**

37. Caucasus Research Resource center (CRRC)
38. Microsoft Innovation Center
39. Bi-Line
40. Economic Consulting Service of Gyumri

**List of interviewed organizations****Educational Organizations**

1. Yerevan State University
2. International Center for Agribusiness Research and Education (ICARE) Foundation,
3. Echmiatsin Grigor Lusavorich University
4. Gyumri #4 VET school
5. Yerevan #1 VET school
6. Gyumri State Technological College
7. Yerevan Armenian Greek State College of Tourism
8. Gyumri Information Technology Center
9. Gyumri State Engineering College

**Government**

1. Gyumri Technopark
2. Ministry of Education and Science
3. VET Development National Center
4. National Statistics Service
5. Shirak Marzpetaran/education department

**Donors**

6. GIZ
7. DVV International
8. UNDP
9. EU delegation
10. World Bank

**Businesses**

11. Festo ges. M.b.H./Festo Didactic Gmbh & Co. KG
12. Amasya Cheese Factory
13. G&V Textile factory
14. Lentex textile factory
15. Cherkezi Dzor Fishery and Restaurant