

# Expanding Apprenticeship in the United States: Barriers and Opportunities

## Family Impact Seminar

December 4, 2012

Albuquerque, New Mexico

Robert I. Lerman

American University and Urban Institute

# New Salience About Workforce Issues in the U.S.

- High unemployment coexists with significant skill gaps
- Most unemployment is cyclical but some is structural
- High joblessness for less educated; in 2011 New Mexico, 41% of high school grads and 49% of dropouts were not working
- Still experiencing high dropout rates from American secondary schools, with especially high rates among males and minorities; over 40% of males in New Mexico did not complete high school in four years
- Construction and manufacturing hit hard, big job losses for males--construction jobs fall from 7.6 to 5.5 million today; manufacturing jobs from 14 to 11.7 million

# Machinists in Arlington, Texas

- Less than 2 years ago, the chair of the Institute for a Competitive Workforce recounted a story about vacancies of high level machinists in a Texas area where companies were manufacturing aircraft
- In trying to fill the vacancies, the chair asked workforce agencies, community colleges how many they were training and the answer was none
- He realized the complete disconnect between the training system and employer demand
- Similar stories have been told about welders

## **Square Pegs, Round Holes**

An overview of the  
employer-candidate mismatch

**52%**

of U.S. companies  
report difficulty  
filling jobs

**47%**

of employers blame  
prospects' lack of "hard"  
job skills or technical skills

**35%**

of companies cite  
candidates' lack of  
experience

**25%**

of companies blame lack  
of business knowledge or  
formal qualifications

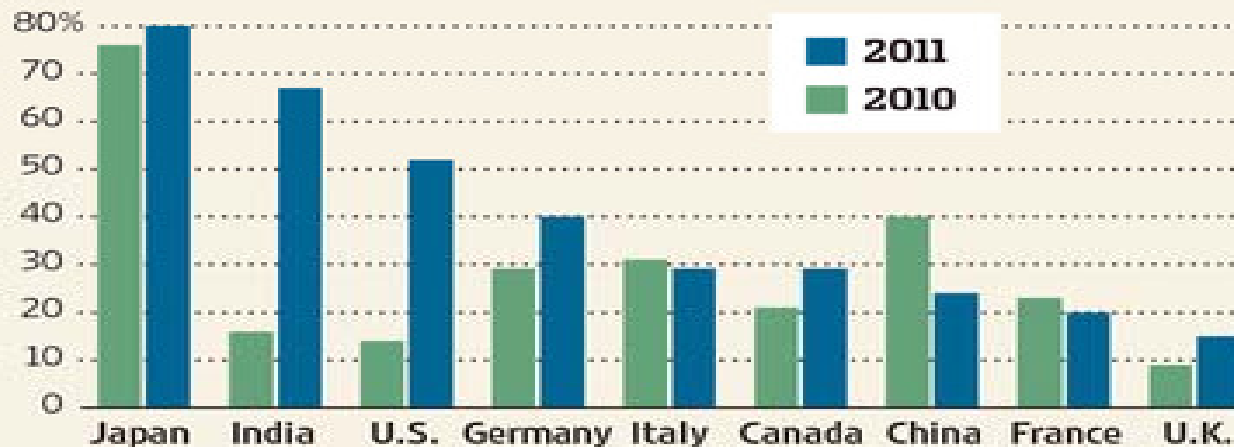
**28%**

of companies are  
increasing staff training  
and development

Source: ManpowerGroup

## Where Jobs Go Wanting

Percentage of employers reporting difficulty filling positions by country, 2010 vs. 2011



## The Help That's Most Wanted

Hardest jobs for U.S. employers to fill

2011		2006	
1	Skilled trades	1	Sales representatives
2	Sales representatives	2	Engineers
3	Engineers	3	Nurses
4	Drivers	4	Technicians
5	Accounting & finance staff	5	Accountants
6	IT staff	6	Administrative assistants /personal assistants
7	Management/executives	7	Drivers
8	Teachers	8	Call-center operators
9	Secretaries/administrative assistants	9	Machinists
10	Machinists/machine operators	10	Management/executives

Source: ManpowerGroup

# Why the disconnect between job skills and potential workers?

- US lacks a good system for seamlessly integrating demands for occupational skills with the training systems for building such skills
- Schools operate largely independently of labor market considerations, sometimes purposely
- The US has almost a single “ideal”—finish high school, go to college, and then find an occupation
- Oddly, youth work while in school but in ways not connected to their careers

# Apprenticeships Offer A Good Approach to Dealing with Mismatch

- What is apprenticeship?
- Intensive combination of work-based (3-4 years) and classroom training (2+ years)
- Apprentices earn while they learn
- Sectoral strategies, employer involvement
- Many additional benefits--high standards for recognized credentials—meets state licensing and certification standards

# Key concept

- “Learning through practice alongside and under the guidance of an expert practitioner is the most effective way to transmit professional experience and skills from one generation to the next”



# Apprenticeship as Youth Development

***READ***

***The Means to Grow Up***

***by Robert Halpern***

# For young and old, apprenticeship

- Conveys occupational pride, identity, apprentices become part of “communities of practice”
- Emphasizes *using* skills; academic skills erode when they go unused
- Works on demand and supply sides of the job market; schools work only on the supply side
- Offers mentoring critical for at-risk young people
- Yields a valued credential, smooth transition to rewarding careers

# Employers lead the way

- Firms willing to finance training--studies indicate many breakeven during the training period, dramatically lowering government costs
- Marketing and technical assistance are important to helps firms see how high levels of worker skills can raise productivity, improve quality, and innovation
- Apprenticeship stimulates firms to alter their expectations and thereby raise the status and quality of many occupations

# International Experience

- Apprenticeship is a mainstream route to career success in European & other advanced economies
- Provides training for 50-70 percent of young people in Switzerland, Austria, and Germany.
- Skills of manufacturing workers in these countries part of their comparative advantage in that sector
- Apprenticeships are expanding rapidly in Ireland, Australia, United Kingdom, covering many occupations, including nursing, information technology, finance, and advanced manufacturing

# High Income Countries Further Ahead in Apprenticeships than BAs

- Switzerland has an income per capita that is over one-third higher than the US
- While it has great universities, over 70 percent of young people go through apprenticeships
- Many of Germany's best students—those who can attend college for free—go to apprenticeships
- Youth unemployment rates are far lower in these countries than in the U.S. and other countries lacking an extensive apprenticeship system

# What makes Swiss successful?

- General skills are learned in a problem-oriented setting, offers good motivation for at-risk youth
- Skills learned by apprentices assist in the rapid adoption of new technologies
- National recognition of standards
- Provides attractive alternatives for talented youth who are tired of school
- Most employers providing apprenticeships recoup benefits that exceed the costs (value of productive help by apprentice is higher than costs)

# UK Experience is Relevant

- Started fresh after giving up many programs
- Relatively free labor market
- Concerns about wage inequality
- Job skills, including workplace skills, of non-college youth a big problem
- Tendency toward college as the only route to successful careers

# UK Apprenticeships

- Apprentices are employed people who receive official, structured training
- Related training delivered 1 day per week at a vocational provider (college, commercial company)
- They normally work 4 days per week or more
- But the program is flexible – the employer decides how it is delivered and the contents of the course
- Apprenticeships are for young and current workers
- Government subsidizes training costs



# UK Program is expanding rapidly

- From very low numbers in 2000, the program is now reaching 281,000 entrants
- Completion rates are over 70 percent
- Expect 400,000 starts in 2014, thereby reaching the number entering UK universities
- Demonstrates feasibility even in countries that have not used apprenticeship lately

# Most popular apprenticeships in UK

Framework and starts	2008/09	2009/10
Customer Service	22,100	29,400
Business Administration	20,500	26,500
Hospitality and Catering	16,100	20,900
Children's Care Learning and Development	16,900	19,600
Health and Social Care	12,000	17,400
Retail	10,700	16,800
Hairdressing	15,900	15,800
Engineering	14,700	14,500
Construction	15,700	13,400
Active Leisure and Learning	7,800	10,800

# Other new innovations in apprenticeships

- Computer field is highly successful at using apprenticeships; graduates of computer apprenticeships in more demand than BAs
- Entrepreneurship apprenticeships have developed successfully in Finland
- Finland illustrates the importance of job-based training; high academic skills but very high youth unemployment

# Apprenticeship Systems in the U.S.

- 3 systems in the U.S.: 1) “Registered Apprenticeship,” operated under supervision by the U.S. Department of Labor, 2) unregistered and 3) youth apprenticeships
- About 350,000-400,000 workers are in 20,000 RA programs, with about half in construction; mostly an adult system, average age at about 27; maybe 500,000 or more in other apprenticeships
- Poor funding nationally, but some states do more
- Evidence show returns to apprenticeship for workers and employer sponsors are quite satisfied

# Evidence from Washington State Shows Large Earnings Gains from Apprenticeship

- Results are based on a methodology that matches workers on their earnings before they enter one or another type of training
- It includes workers who enter public job service centers (One-Stops)
- The study tracked their earnings after training using administrative records drawn from the unemployment insurance system

## Benefits and Costs of Apprenticeship Training

	First 2.5 Years After Program		Forecast to Age 65	
	Participant	Public	Participant	Public
<b>Benefits</b>				
Earnings	\$27,883		\$205,825	
Employee Benefits	\$5,577		\$41,166	
Taxes	-\$7,249	\$7,249	-\$53,515	\$53,515
Transfers*	\$984	-\$984	\$4,052	-\$4,052
<b>Costs</b>				
Foregone Earnings	\$23,997		\$23,997	
Program Costs**	-\$652	-\$2,546	-\$652	-\$2,546
<b>TOTAL</b>	<b>\$50,540</b>	<b>\$3,719</b>	<b>\$220,874</b>	<b>\$46,916</b>

\* Transfers include UI, TANF, Food Stamps, and medical benefits. TANF benefits reflect the value of cash grants, childcare, and other client support services.

\*\* Participant program costs refer to tuition only; it does not include costs such as books and supplies. Public program costs do not include student financial aid programs.

**Benefits and Costs of Job Preparatory Training  
at Community & Technical Colleges**

	First 2.5 Years After Program		Forecast to Age 65	
	Participant	Public	Participant	Public
<b>Benefits</b>				
Earnings	\$13,644		\$90,455	
Employee Benefits	\$2,729		\$18,091	
Taxes	-\$2,354	\$2,354	-\$15,603	\$15,603
Transfers*	-\$1,796	\$1,796	-\$1,324	\$1,324
<b>Costs</b>				
Foregone Earnings	-\$2,309		-\$2,309	
Program Costs**	-\$3,869	-\$7,560	-\$3,869	-\$7,560
<b>TOTAL</b>	<b>\$6,045</b>	<b>-\$3,410</b>	<b>\$85,442</b>	<b>\$9,367</b>

\* Transfers include UI, TANF, Food Stamps, and medical benefits. TANF benefits reflect the value of cash grants, childcare, and other client support services.

\*\* Participant program costs refer to tuition only; it does not include costs such as books and supplies. Public program costs do not include student financial aid programs.

## Other States Show Significant Gains in Earnings/Year Six Years After Enrolling in Apprenticeship

	All	Men	Women
Florida	5,242***	5,494***	79
Georgia	6,508***	6,290***	9,120**
Iowa	4,680***	4,843***	5,095
Kentucky	5,770***	5,719***	6,153
Maryland	14,977***	14,843***	20,039
Missouri	7,239***	7,425***	4,069
New Jersey	6,870***	7,328***	-2,215
Ohio	6,914***	6,897***	6,889***
Pennsylvania	8,304***	8,483***	2,643**
Texas	5,504***	5,644***	1,044
<b>AVERAGE</b>	<b>6,595***</b>	<b>6,737***</b>	<b>2,615***</b>

Source: Mathematica Policy Research study for USDOL.



# Employer Sponsors Also Benefit

- Apprenticeships are in several industries but often are small programs, with only 1-4 apprentices
- Employers express an extraordinary level of satisfaction in apprenticeships
- They see many benefits, from reduced turnover to increases in skills and productivity
- Although “poaching” is not a significant problem for 3 in four employers—it is a problem for many
- Need more data to examine the costs as well as short-term and long-term gains for employers

# Completion Rates Are High

- 54 percent say that at least 80 percent of their apprentices complete their program.
- High completion rates were especially common in the aerospace, automotive manufacturing, energy, health services, retail, and transportation industries.
- Still, as noted above, non-completion is of some concern to over half of sponsors; 24% saw completion as a significant problem and 31% as a minor problem. The concerns are less in union programs (18% vs. 26%)
- Personal and performance reasons both help explain non-completion; but 30% said non-completion took place when apprentices earned a license, then moved to another job

# So why doesn't the United States expand apprenticeship?

1. *Knowledge* of apprenticeship is very limited
2. *Academic approach* to learning valued skills dominates the thinking of policymakers
3. *Competition* from high schools, community colleges and from proprietary schools
4. *Mobility* is a primary concern for employers, policymakers, parents in different ways
5. *Unions* dominate registered apprenticeship, affecting employer acceptance and operations

# Knowledge as a chicken/egg problem

- Americans know little about apprenticeships, because few are said to exist, but we have few because people are unaware of their strengths
- This is especially true of elites, who have no relatives or friends who have completed one
- Even true of Labor Department officials
- Many ask, is it like an internship?
- Once the concept is explained, they recognize the approach in the trades, in medicine, and even law

# Academic, Classroom-based Approaches Dominate

- College, post-secondary education are viewed as the only route to career success
- Researchers use skill and human capital terms but estimate the returns to skill as formal educational attainment and/or test scores on math, English, science. Goldin and Katz, two prominent labor economists, see a race between technology & supply of college graduates
- President Obama calls for the U.S. to become again the country with the highest college graduation rate
- Big expansion of college aid—training dollars focus on the disadvantaged and displaced workers

# Academics at the High School Level

- Movement to establish “common core” to define what every student should learn to succeed in college and/or careers
- Designers argue students need the same set of skills to do well in college and careers
  - Consequently, *all* students — those attending a four-year college, those planning to earn a two-year degree or get some postsecondary training, and those seeking to enter the job market right away — need to have comparable preparation in high school.
- Crowds out vocational (career and technical) education concentrations; concentrators take 3 occupational courses
- Most states have already adopted these curricula
- Some exceptions, including growth of Career Academies

# Percent of Workers Using Math

Subject Used	All	Upper White Collar	Upper Blue Collar
Any Math	94	95	94
Add/Subtract	86	93	87
Multiply/Divide	78	89	81
Fractions	68	82	70
Algebra I	19	30	36
Geometry	14	20	29
Statistics	11	22	10
Algebra II	9	14	16
Calculus	5	8	8

Source: Survey conducted by Michael Handel for National Research Council.

# Skill Requirements, Tasks

Skill Required	All	Upper White Collar	Upper Blue Collar
Education Level	HS + Voced	Almost BA	HS, Some Voced
Added Years of Work Experience	2.94	3.35	3.46
Added Years of Job Learning to Do the Job Well	3.35	3.80	3.95
% Deal with Tense Situations	60	65	61
% Teach/Train Others	75	86	75
% Supervise Others	48	55	57

Source: Survey conducted by Michael Handel for National Research Council.



# Apprenticeship Competitors

- Except for construction, some manufacturing occupations, apprenticeship covers few occupations
- Filling the vacuum are high school CTE, community colleges, for-profit colleges
- Work-based learning is not a requirement in these programs but is sometimes used
- The colleges offer certificates, many that are not broadly recognized by employers
- Recent initiatives in sectoral employment programs

# Evidence of Gains from VocEd, but..

- Both high school and postsecondary CTE yield positive returns, though highly variable and lower than apprenticeship programs
- But, many students fail to complete even one college level course—very high dropout rates
- Few requirements for work-based learning
- Community colleges often have very few counselors per student; courses often not well-designed to meet timing needs
- Crowding especially severe in recession

# Mobility Concerns

- Will people be changing careers so much that an occupation-based system is wasteful? If so, it is better to emphasize general learning Is training flexible enough?
- Will workers be able to enter college? Concerns that minorities will be pushed into low status options
- Apprenticeship is not an option for youth
- Will workers leave the firm, making the rationale for investment less profitable?
  - Only 25% of firms who use apprenticeships regard the “poaching” problem as a serious problem

# Union Role in Apprenticeships

- As of 2007, one in four sponsors were operating joint labor-management programs
- They accounted for nearly two-thirds of all apprentices; nearly 40 percent of apprentices were in union construction programs
- Major influence on registered apprenticeship
- Resist changes, e.g., youth apprenticeship and shorter apprenticeships, interim credentials
- Firms skeptical when unions play major role

# Some New Interest

- Outcomes are especially weak for young men in purely academic tracks—indicating formal academic training need be the only route to quality careers.
- Recognition of the importance of non-academic skills that can be most convincingly learned on the job
- Concerns about rising college debt
- *Sameness is not equality*—more are realizing that student motivation is central to completion—dropping out of formal schooling often due to boredom; competency cannot be delivered like a pizza but require engagement
- More people recognize that motivation and learning styles vary—from abstract, classroom-based approaches to hands-on, contextualized applications

# Other Emerging Initiatives

- Variety of approaches to create a more seamless web with work-based learning, employer involvement, occupational and generic skills
- For Career Academies, results from experiments show gains for at-risk youth
- Exemplary high school Career/Technical Education and community college programs; Chicago's Austin Technology reaching high skills for minority youth
- Sectoral strategies in job training
- Apprenticeship expansion

# Two Missed Opportunities

- Stimulus bill does little for apprenticeship
- Continues polarized system—billions more for higher education and WIA, Job Corps, but no additional resources to expand apprenticeships
- No one mobilized business and labor groups to provide at least a modest increase for apprenticeship?

# States, WIA Can Lead the Way

- Can bring together community colleges, firms, and workers as part of broad effort-use new CC grants
- Meets various criteria—jointly designed with firms, basic skills with occupational training, transparent career pathways
- Provide allocation to employers for education and other costs of starting and operating program—perhaps fund 1 of each 4 apprentices if recruitment is at One-Stop
- Examine skill profiles for relevant occupations, make sure employers have access



# Some States Are Achieving Success

- Consider the recent case of South Carolina
- Stimulated by the state chamber, the state provides \$1 million per year to expand apprenticeship—base is a technical college
- Small tax credit for small employers
- Effort so far has led to one new program per week, 50% increase in apprentices
- Cost per added apprentice is \$3,600; present value of earnings gains at least \$100,000

# Implications for New Mexico

- Currently New Mexico's apprenticeship level is low relative to the already low US levels
- No reason New Mexico cannot turn around apprenticeship using the South Carolina approach
- The key is for the state to encourage employers to create more apprenticeship slots, by investing in marketing and technical assistance
- Impacts will be highly positive at low gov't costs, ultimately creating more middle class jobs

# Concrete steps at federal level

- Make apprenticeship the center of a national skills strategy for jobs in key industries and occupations
- Expand funding (triple the current tiny \$22 million) for the Office of Apprenticeship to market, monitor, and conduct research on workers, firms, standards
- Establish a tax credit of \$5,000 for each apprentice position beyond 80% of current levels by firms
- Provide more funding for the related instruction component of apprenticeship training
- Provide incentives for apprenticeship linkages with community colleges and career colleges

# (Forthcoming) American Institute for Innovative Apprenticeship

- With another colleague, in October 2012, I incorporated this institute as a nonprofit
- Key projects (assuming funding) will include
  - Information clearinghouse, including occupation specific standards from several countries
  - Social network linking past, current apprentices and program sponsors, employer videos
  - Forums, training, consultations with policymakers