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An analysis of workforce efficiency using organization expenses indicators

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Abstract. The objective of this paper is to carry out an evaluation of employee efficiency in the United States using a professional data base, namely the ECS Survey on Workforce Efficiency (2000/2001) conducted by Watson Wyatt, which includes the responses of 453 organizations covering 1,685,336 employees. To that end, we measure workforce efficiency of US organizations, differentiated by profit status, industry sector and employee size, using expenses indicators. Our findings reveal that new employee strengths will depend upon developing and using the kinds of information and analyzes that can keep workers, educators, employers and employee program administrators abreast or ahead of changing conditions.

Key words: Workforce, efficiency, expenses indicators.

Introduction

Faced with formidable foreign and domestic competition, US firms have pursued many paths in recent years with the aim of reducing costs. By way of example, they have downsized and outsized in an effort to reduce personnel costs, and have applied a policy of mergers and acquisitions in order to achieve increased economies of scale. More particularly, manufacturing organizations have sought to reduce costs and improve competitive advantage by improving quality, reducing lead times, automating operations and a host of other improvements. In this line, workforce

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efficiency constitutes a topic whose professional and academic importance has not traditionally reflected a direct relationship with its economic relevance. In fact, only a limited amount of research has been devoted to this subject (Young & Selto, 1991; Fry, 1992; Vergin, 1998) and, indeed, these analyzes suffer from a number of significant weakness. The most important of these is that they have focused their attention on only one or two business ratios, and in this paper we try to remedy this weakness with a complete analysis of workforce efficiency in the US by using a large number of business ratios. By adopting this more wide-ranging approach, we will hopefully provide a more complete picture of this topic.

More specifically, the central aim of this paper is to carry out an evaluation of workforce efficiency in the United States using a professional data base, namely the ECS Survey on Workforce Efficiency (2000/2001) designed and developed by Watson Wyatt, which includes responses of 453 organizations covering 1,685,336 employees. To that end, we measure workforce efficiency of US organizations, differentiated by profit status, industry sector and employee size, using expenses indicators. The Survey includes two types of profit status organizations (profit and non-profit), together with all productive sectors (manufacturing: durable goods manufacturing and non-durable goods manufacturing; non-manufacturing: utilities and energy, retail and wholesale trade, services, health care; and financial services: banking and finance and insurance) and, finally, three types of size classification (sales size, asset size and employee size). On the basis of our results, we can determine whether there are significant differences in US efficiency ratios, identifying these differences by factors such as profit status, industry or size of organization.

Several points must be stressed in this introductory section. First, the Survey draws on an extensive sample of organizations with a very representative character. Thus, the sample includes a large number of organizations divided by their profit status, their industry sector and their employee size. Secondly, our statistical information is updated to the year 2001. This is as useful as it is attractive for the purpose of an empirical analysis, given that the possible policy implications we derive from our study are based on a realistic picture of the current situation, which should make them more useful for policy-makers in their labor decisions. Finally, the availability of our exhaustive data base allows us to obtain empirical evidence that can be used to draw comparisons between the most relevant type of organizations found in the US economy. This evidence allows us, in turn, to clarify the different industrial policies that government could implement in order to stimulate the specific weaknesses identified by our study.

Table 1 shows a descriptive analysis of the sample, initially divided by both geographical region and employee size. With respect to the region variable, we can observe that the majority of these organizations are concentrated in the North Central region, 37.1%, whilst the South Central region shows the lowest number, 9.9%. The remaining percentages are North-east, 22.1%, South-east, 15.5%, and West Coast, 15.5%. As regards employee size, the highest percentage of sample organizations appears in the smallest organizations, that is to say, those with under 200 employees, 20.3%, with the next largest percentage appearing in the 2,000 to 4,999 employees category, 18.1%. By contrast, the lowest percentage appears in big organizations, that is to say, the 10,000 to 19,999 employees group, 2.9%.

Table 1
Descriptive Analysis of the Sample

By region	North-east	South-east	North Central	South Central	West Coast	United States	% of Responses
Entire Sample Combined	100	70	168	45	70	453	100.0%
Profit Status							
Profit Organizations	74	43	125	28	50	320	70.6%
Non-profit Organizations	26	27	43	17	20	133	29.4%
Industry Sector							
Durable Goods Manufacturing	14	12	34	7	11	78	17.2%
Non-Durable Goods *Manufacturing*	7	3	20	2	8	40	8.8%
Utilities and Energy	7	3	5	9	4	28	6.2%
Retail and Wholesale Trade	14	6	8	0	8	36	7.9%
Services	27	25	52	18	26	148	32.7%
Health Care	11	9	20	8	6	54	11.9%
Banking and Finance	12	10	11	1	2	36	7.9%
Insurance	8	2	18	0	5	33	7.3%
Regional Percentages	22.1%	15.5%	37.1%	9.9%	15.5%	100.0%	

By employee size	Under 200 Employees	200 to 499 Employees	500 to 999 Employees	1000 to 1999 Employees	2000 to 4999 Employees	5000 to 9999 Employees	10000 to 19999 Employees	20000 Employees and Over	% of Responses
Entire Sample Combined	92	78	73	57	82	32	13	18	100.0%
Profit Status									
Profit Organizations	65	56	54	37	55	21	8	16	70.6%
Non-profit Organizations	27	22	19	20	27	11	5	2	29.4%
Industry Sector									
Durable Goods Manufacturing	22	23	12	8	7	2	3	0	17.2%
Non-Durable Goods *Manufacturing*	8	9	8	6	5	1	0	2	8.8%
Utilities and Energy	4	2	4	7	5	3	0	2	6.2%
Retail and Wholesable Trade	3	5	9	4	6	3	1	4	7.9%
Services	40	19	20	13	28	12	6	8	32.7%
Health Care	4	11	9	7	16	4	2	1	11.9%
Banking and Finance	10	3	7	6	7	2	0	1	7.9%
Insurance	1	6	4	6	8	5	1	0	7.3%
Region									
Northeast	23	17	14	11	21	10	2	2	22.1%
Southeast	7	12	19	11	13	5	1	2	15.5%
North Central	36	33	18	18	33	7	7	11	37.1%
West Coast	20	12	13	9	7	5	1	1	15.5%
Organization Size Group Percentages	20.3%	17.2%	16.1%	12.6%	18.1%	7.1%	2.9%	4.0%	

Empirical results by profit status

With respect to the expenses ratios in relation to manpower, it is significant that the proportion of payroll and benefits expenses as a percentage of manpower expenses is similar in both profit and non-profit organizations, around 98%. When we divide both ratios we observe, as expected, that in the case of payroll expenses as a percentage of manpower expenses the highest value can be found in profit organizations, 80.5%, albeit with a very small difference when compared to non-profit organizations. By contrast, the benefits expenses as a percentage of manpower expenses is higher for non-profit organizations, 18.6%, as compared to 17.8% for profit organizations, which suggest that employees of non-profit organizations receive more benefits than their counterparts in profit organizations. In this context, we can note that the percentage of benefits over payroll expenses is higher for non-profit organizations, 24.2%, and it seems obvious that these organizations place emphasis on the benefits part of the total compensation package. On the other hand, the percentage of temporary and contract workers expenses in relation to manpower expenses is similar in both profit and non-profit organizations, although with a higher level in the latter, 3.7%. This finding would appear to support the idea of voluntary employees in this type of organization.

With respect to operating expenses, we should note that all ratios are higher for non-profit organizations. Here, we should recall that operating expenses include all general and administrative overhead expenses, plus the cost of goods sold, that is to say, all the direct costs of manufacturing or providing the product or service. This means that the percentage of payroll and benefits expenses in relation to operating expenses is significantly higher for non-profit organizations, 45.4%. This pattern is essentially repeated when we disaggregate these expenses in payroll, benefits and temporary and contract workers as a percentage of operating expenses. Here, we should take into account that most non-profit organizations receive public funds in addition to private donations, with this situation normally leading to an increase in the pay and benefits items in the balance sheet. The benefits route is usually a fiscally advantageous mechanism in managing the funds of non-profit organizations, in such a way that the benefits item is increased for non-profit organization in relation to operating expenses.

At the same time, it is interesting to analyze the components of those expenses which belong to benefits, namely medical, and paid time-off. In the former case, the level of the ratio is higher for profit organizations, 46.6%, and thus the emphasis is not placed on medical expenses as part of total benefits. The highest level of paid time-off can be found in non-profit organizations, as part of the explanation for benefits items. Additionally, if we consider training expenses, we can note that the percentage of expenses devoted to training is concentrated in profit organizations, 1.3%, because of the specificity of funds assigned to this item and the direct relationship with costs and profitability.

Staffing expenses have much more weight in profit organizations than in their non-profit counterparts, 29.9% as compared to 24.2%. This situation might lead us to conclude that selection is more rigorous in profit organizations, not due to the effect of selection in the performance of the organization, but rather because of the turnover which, in the majority of cases, results from the number of voluntary employees.

Table 2
Ratios by Profit Status

	Profit Organizations	Non-profit Organizations	Entire Sample Combined
Payroll and Benefits Expenses as a Percent of Manpower of Manpower Expenses	98.2%	98.3%	98.3%
Payroll Expenses as a Percent of Manpower Expenses	80.5%	79.7%	80.2%
Benefits Expenses as a Percent of Payroll Expenses	20.5%	24.2%	21.8%
Temporary and Contract Worker Expenses as a Percent of Manpower Expenses	3.0%	3.7%	3.2%
Benefits Expenses as a Percent of Manpower Expenses	17.8%	18.6%	18.0%
Payroll and Benefits Expenses as a Percent of Operating Expenses	32.3%	45.4%	37.4%
Payroll Expenses as a Percent of Operating Expenses	27.0%	36.9%	30.8%
Temporary and Contract Worker Expenses as a Percent of Operating Expenses	1.2%	2.0%	1.5%
Benefits Expenses as a Percent of Operating Expenses	6.3%	8.9%	7.3%
Medical Expenses as a Percent of Benefits Expenses	46.6%	40.1%	44.4%
Medical Expenses per Covered Employee	$3,838	$3,785	$3,821
Paid Time Off (PTO) Expenses as a Percent of Benefits Expenses	36.2%	36.8%	36.4%
Paid Time Off (PTO) Expenses as a Percent of Payroll Expenses	8.9%	10.0%	9.2%
Manpower Expenses as a Percent of Gross Sales/Revenue	21.4%		21.4%
Payroll Expenses as a Percent of Gross Sales/Revenue	18.7%		18.7%
Benefits Expenses as a Percent of Gross Sales/Revenue	4.4%		4.4%
Gross Sales/Revenue Payroll Expenses as a Percent of Gross Sales/Revenue	$356,080		$356,080
Payroll and Benefits Expenses per FTE Employee	$55,737	$51,761	$54,330
Manpower Expenses per FTE Employee	$57,090	$52,995	$55,630
Payroll Expenses per FTE Employee	$50,669	$42,783	$47,970
Benefits Expenses per FTE Employee	$8,93	$10,448	$9,468
Human Resources Function Operating Expenses as a Percent of Manpower Expenses	4.4%	3.0%	3.9%
Human Resources Function Operating Expenses per Human Resources Function FTE Employee	$96,707	$93,641	$95,521
Human Resources Function Operating Expenses per FTE Employee	$1,557	$1,375	$1,487
Human Resources Function Operating Expenses per Employee (Headcount)	$1,964	$1,536	$1,801
Training Expenses as a Percent of Manpower Expenses	1.3%	1.1%	1.2%
Training Expenses per Employee (Headcount)	$642	$451	$578
Training Expenses per FTE Employee	$597	$472	$555
Staffing Expenses as a Percent of Human Resources Function Operating Expenses	29.9%	24.2%	27.7%
Staffing Expenses per Hire	$2,696	$1,590	$2,331

Empirical results by industry sector

In relation to manpower expenses, the highest value of payroll and benefits as a percent of these expenses is concentrated, as we expected, in the services sector, 98.8%, and in the banking and finance sector, 98.7%. Here, we should recall that the services sector includes services related to computer programming and data processing services and, more specifically, that the payroll and benefits in this sector have been remarkably high during recent years. Other services are related to construction, education, engineering and research services, general business services, government and social services, leisure and hospitality services, mining and agriculture, professional and general business services, professional and general business services, professional services, real estate and transportation services.

When we split the payroll and benefits in relation to manpower expenses, we can note that the payroll maintains its highest percentage in the banking and finance sector, 84.8%, but the percentage relative to benefits is located in the utilities and energy sector, 21.6%. As we argued before, this latter sector reflects industrial groups such as communications and telecommunications services, which have been overpaid during recent years, specifically in their benefits policies. This observation is consistent when we analyze benefits competitiveness through the rate of benefits in relation to the payroll. The manpower expenses in relation to gross sales/revenue, with this representing the percentage of sales/revenue spent on total manpower, is concentrated in the services sector, 26.1%. In this context, notice the demand coming from the following industry groups, which include: computer programming and data processing services, construction, education, engineering and research services, general business services, government and social services, leisure and hospitality services, mining and agriculture, professional and general business services, professional services, real estate, transportation services and others. Here, it is necessary to take into account the demand for manpower in relation to the service sector.

Turning to operating expenses, the highest value of payroll and benefits expenses as a percentage of operating expenses appears in the health care sector, 52.4%. When we analyze some components of total compensation, such as medical expenses and paid time-off as a percent of benefits expenses, we can observe that the highest percentage is concentrated in the banking and finance sector, 51.8%. This observation is particularly worthy of note, in the sense that the highest weight of benefits, either in relation to manpower expenses or operating expenses, are not concentrated in banking and finance. The years we are analyzing reflect the upsurge of the telecommunications sector. We should not forget that the banking and financial sub-sector traditionally has high levels of compensation packages. Finally, the ratio that expresses training expenses as a percentage of manpower expenses is concentrated in the retail and wholesale trade, 2.6%.

Empirical results by size

In relation to the expenses ratios, the higher percentage of payroll and benefits with respect

Table 3
Ratios by Industry Sector

	Durable Goods Manufacturing	Non-Durable Goods Manufacturing	Utilities and Energy	Retail and Wholesale Trade	Services	Health Care	Banking and Finance	Insurance
Payroll and Benefits Expenses as a Percent of Manpower of Manpower Expenses	98.1%	98.6%	97.6%	96.7%	98.8%	97.7%	98.7%	97.7%
Payroll Expenses as a Percent of Manpower Expenses	78.7%	83.2%	76.0%	81.6%	80.1%	81.0%	84.8%	77.9%
Benefits Expenses as a Percent of Payroll Expenses	23.7%	19.3%	27.2%	17.8%	22.2%	21.1%	15.2%	25.0%
Temporary and Contract Worker Expenses as a Percent of Manpower Expenses	2.6%	2.2%	4.9%	4.9%	2.9%	4.2%	2.8%	3.3%
Benefits Expenses as a Percent of Manpower Expenses	19.7%	15.4%	21.6%	15.2%	18.6%	16.7%	13.9%	19.8%
Payroll and Benefits Expenses as a Percent of Operating Expenses	32.6%	31.8%	34.8%	21.2%	40.3%	52.4%	27.2%	35.3%
Payroll Expenses as a Percent of Operating Expenses	29.6%	30.8%	25.2%	15.6%	33.2%	41.4%	23.0%	27.3%
Temporary and Contract Worker Expenses as a Percent of Operating Expenses	0.9%	0.8%	3.4%	0.8%	0.5%	2.6%	1.4%	1.4%
Benefits Expenses as a Percent of Operating Expenses	6.8%	5.0%	8.1%	4.2%	8.1%	8.9%	4.5%	7.4%
Medical Expenses as a Percent of Benefits Expenses	42.9%	47.1%	35.9%	49.6%	45.2%	42.8%	51.8%	40.8%
Medical Expenses per Covered Employee	$4,405	$3,649	$4,149	$3,321	$3,648	$3,712	$3,525	$4,076
Paid Time Off (PTO) Expenses as a Percent of Benefits Expenses	30,5%	37.1%	42.4%	39.6%	31.6%	42.3%	49.6%	36.9%
Paid Time Off (PTO) Expenses as a Percent of Payroll Expenses	8.7%	7.9%	12.9%	6.4%	9.7%	9.6%	7.2%	8.6%
Manpower Expenses as a Percent of Gross Sales/Revenue	21.6%	24.8%	16.4%	10.4%	26.1%	23.2%		
Payroll Expenses as a Percent of Gross Sales/Revenue	18.0%	22.3%	13.0%	9.6%	23.7%	19.6%		
Benefits Expenses as a Percent of Gross Sales/Revenue	4.4%	3.6%	3.2%	1.5%	6.1%	4.2%		
Gross Sales/Revenue Payroll Expenses as a Percent of Gross Sales/Revenue	$311,311	$323,396	$565,526	$429,976	$321,541	$369,670		
Payroll and Benefits Expenses per FTE Employee	$53,366	$59,038	$62,984	$39,254	$54,315	$47,219	$59,791	$58,277
Manpower Expenses per FTE Employee	$54,284	$59,900	$65,921	$40,337	$55,906	$48,342	$52,053	$45,132
Payroll Expenses per FTE Employee	$43,394	$49,379	$52,008	$26,850	$47,983	$43,609	$52,053	$45,132
Benefits Expenses per FTE Employee	$10,032	$9,020	$14,039	$4,665	$9,605	$8,302	$7,558	$10,959
Human Resources Function Operating Expenses as a Percent of Manpower Expenses	4.7%	2.0%	2.5%	5.4%	5.2%	1.8%	2.7%	3.4%
Human Resources Function Operating Expenses per Human Resources Function FTE Employee	$135,030	$68,826	$103,884	$55,238	$90,810	$76,728	$91,719	$114,266
Human Resources Function Operating Expenses per FTE Employee	$1,550	$1,153	$1,686	$790	$1,709	$862	$1,817	$2,049
Human Resources Function Operating Expenses per Employee	$2,721	$1,092	$1,238	$1,387	$1,858	$663	$1,601	$2,930
Human Resources Function Operating Expenses per Employee (Headcount)	0.9%	0.6%	1.1%	2.6%	1.7%	0.5%	1.2%	0.9%
Training Expenses as a Percent of Manpower Expenses	$501	$392	$1,191	$281	$763	$242	$672	$461
Training Expenses per Employee (Headcount)	$528	$393	$665	$393	$686	$289	$824	$470
Training Expenses per FTE Employee	15.8%	36.0%	21.4%	55.3%	27.1%	30.3%	25.4%	24.9%
Staffing Expenses as a Percent of Human Resources Function Operating Expenses	$2,997	$3,499	$3,162	$1,531	$2,216	$879	$2,913	$2,588

to manpower expenses appears in the larger organizations, more specifically, if we measure size through sales size, 98.3%, and employee size, 98.2%. However, when we measure by asset size, we find that the concentration is found in the smaller organizations, with this situation possibly being due to the intensity of capital when we measure size via assets. When we analyze the different components, we can observe, somewhat unexpectedly, that the proportion of payroll expenses in relation to manpower expenses is located in smaller organizations, 81.7%, 83% and 81.3% in relation to sales size, asset size and employee size, respectively. However, the percentage of benefits is again found in larger organizations, save for when we measure by asset size, although here there is a very small difference between large and small organizations. This observation can lead us to assume that in large organizations the total compensation package is higher, but with high specific weight in the benefits items. Additionally, we should not forget the traditional tax question. This observation is consistent if our measure is the relationship between benefits expenses/payroll expenses with respect to benefits competitiveness. In the same way, temporary and contract worker expenses as a percentage of manpower expenses are concentrated in the larger organizations, except if our observation is made by employee size, and again, in this case, with only limited differences when compared to smaller organizations.

If our point of reference for these compensation components is operating expenses, we can observe that the highest weight of percentages can be found in the smaller organizations, where the percentage of payroll and benefits has levels of 35%, 32.1% and 38.6% for the different measures of size, sales, assets and employees, respectively. The same situation is found when we analyze payroll expenses, temporary and contract worker expenses and benefits expenses. This observation again leads us to the question of capital intensity; big organizations might benefit from larger economies of scale and thus such organizations are usually more capital intensive, as compared to human capital or manpower capital intensive.

When we analyze some benefits components, such as paid time-off and medical expenses, we can observe that for the former case the proportion of this benefit is higher in smaller organizations, mostly due to the culture of the organization, when classified by sales, assets and sizes, with 37.6%, 58.5% and 38.5% respectively. In the case of medical expenses, the concentration is just the opposite, being found amongst larger organizations, with 50.2% for asset size and 49.6% for employee size, in relation to the higher levels of benefits for these organizations. The sole exception relates to sales size, where the concentration is in the smaller organizations, 46.9%. In relation to training expenses as a percentage of manpower expenses, that is to say, the proportion of manpower expenses spent on training, the highest levels are concentrated in the smallest organizations in relation to sales size, 1.4%, and employee size, 1.2%. However, if our measure is by asset size, the higher level is found in the larger organizations, 1.2%, due to capital intensity.

With respect staffing expenses, the higher costs per hire can be found in the largest organizations, while the staffing expenses as a proportion of the human resources operating expenses spent on staffing, are concentrated in the larger organizations, 31.5% when measured by sales size, and 32.1% when measured by employee size. By contrast, if our point of reference is asset size,

Table 4
Ratios by Employee Size

	Sales Size		Asset Size		Employee Size	
	Ubder $100.0 Million	$500.0 Million and over	Under $1 Billion	$1 Billion and over	Under $100.0 Million	$500.0 Million and over
Payroll and Benefits Expenses as a Percent of Manpower of Manpower Expenses	98.0%	98.3%	98.9%	97.9%	97.9%	98.2%
Payroll Expenses as a Percent of Manpower Expenses	81.7%	76.9%	83.0%	82.5%	81.3%	79.5%
Benefits Expenses as a Percent of Payroll Expenses	19.0%	24.2%	17.1%	17.3%	19.3%	21.5%
Temporary and Contract Worker Expenses as a Percent of Manpower Expenses	3.1%	3.3%	2.3%	3.6%	3.6%	3.3%
Benefits Expenses as a Percent of Manpower Expenses	16.3%	21.4%	15.9%	15.4%	16.5%	18.7%
Payroll and Benefits Expenses as a Percent of Operating Expenses	35.0%	30.5%	32.1%	26.2%	38.6%	38.8%
Payroll Expenses as a Percent of Operating Expenses	31.0%	24.8%	25.9%	21.9%	32.8%	29.8%
Temporary and Contract Worker Expenses as a Percent of Operating Expenses	1.4%	1.5%	1.3%	1.5%	1.9%	1.6%
Benefits Expenses as a Percent of Operating Expenses	6.6%	5.8%	7.4%	3.8%	7.2%	7.1%
Medical Expenses as a Percent of Benefits Expenses	46.9	40.3	49.6	50.2	44.8	49.6
Medical Expenses per Covered Employee	$3,648	$3,965	$3,153	$4,068	$3,792	$3,636
Paid Time Off (PTO) Expenses as a Percent of Benefits Expenses	37.6%	30.9%	58.5%	35.6%	38.5%	31.3%
Paid Time Off (PTO) Expenses as a Percent of Payroll Expenses	9.6%	9.1%	8.8%	6.2%	9.1%	9.7%
Manpower Expenses as a Percent of Gross Sales/Revenue	28.0%	16.8%			23.6%	17.7%
Payroll Expenses as a Percent of Gross Sales/Revenue	24.6%	14.4%			21.1%	16.1%
Benefits Expenses as a Percent of Gross Sales/Revenue	5.8%	3.5%			4.5%	2.9%
Gross Sales/Revenue Payroll Expenses as a Percent of Gross Sales/Revenue	$243,835	$519,127			$323,701	$259,893
Payroll and Benefits Expenses per FTE Employee	$54,412	$60,183	$55,511	$58,731	$53,544	$55,105
Manpower Expenses per FTE Employee	$55,766	$61,564	$54,029	$60,207	$55,140	$56,327
Payroll Expenses per FTE Employee	$42,470	$59,844	$43,296	$50,505	$52,195	$40,921
Benefits Expenses per FTE Employee	$8,044	$11,231	$6,359	$8,250	$8,728	$9,698
Human Resources Function Operating Expenses as a Percent of Manpower Expenses	6.2%	2.8%	2.7%	2.8%	4.6%	2.3%
Human Resources Function Operating Expenses per Human Resources Function FTE Employee	$73,753	$122,234	$91,563	$86,465	$88,519	$97,978
Human Resources Function Operating Expenses per FTE Employee	$1,758	$1,086	$2,261	$1,663	$1,934	$602
Human Resources Function Operating Expenses per FTE Employee	$2,169	$1,348	$1,419	$2,754	$2,447	$1,656
Human Resources Function Operating Expenses per Employee (Headcount)	1.4%	0.6%	0.6%	1.2%	1.2%	0.5%
Training Expenses as a Percent of Manpower Expenses	$772	$234	$288	$624	$657	$237
Training Expenses per Employee (Headcount)	$634	$288	$305	$745	$686	$165
Training Expenses per FTE Employee	30.2%	31.5%	31.4%	28.5%	26.2%	32.1%
Staffing Expenses as a Percent of Human Resources Function Operating Expenses	$2,894	$3,322	$1,305	$2,732	$2,605	$3,222

then we find the maximum concentration in the smallest organizations. Although this is the usual trend, this pattern has been boosted significantly in the years under analysis.

Elasticities

Given that sufficient data is available to provide a realistic picture of the relationship between an organizational scope factor and a employee-related factor, the aim of this section is to analyze the slope between these variables. This analysis will allow us to compare the incremental increase in the organizational and employee variables in our sample organizations, differentiating by profit status, industry super-sector and industry sector, in such a way that the analysis is a reference for establishing comparisons between organizations.

Table 5 first shows the incremental increase of full time equivalent employees (FTE), human resources function operating expenses and manpower expenses related to gross sales revenues. In relation to full time equivalent employees, we can note that it is in the retail and wholesale sector where the incremental increase of full time equivalents per unit of sales revenue is the highest. By contrast, the health care sector exhibits the lowest increase. If we analyze the relationship between human resources function operating expenses and gross sales revenues, we find that the highest incremental is in the health care sector, with this variable also being explained by gross sales revenue. In other words, the variable that represents gross sales revenue is positively significant for the human resources function variable in this sector. The lowest increase is observed in the services sector. When we establish the relationship between manpower expenses and gross sales revenue, we observe that the maximum movement is found in the retail and wholesale sector, with the minimum being in durable goods manufacturing. It is worth noting this variable is significant in the health care sector, so manpower expenses are again explained by gross sales revenue.

If we analyze these three variables in relation to operating expenses, we can observe with respect to full-time equivalent employees that the highest incremental increase is found in the retail and wholesale sector, while the lowest is observed in the health care sector. The slope for the relationship between the human resources function variable and operating expenses exhibits the opposite behavior, in such a way that the maximum increase is found in the health care sector and the minimum in the retail and wholesale sector. Finally, with respect to manpower expenses, the highest incremental increase is found in the health care sector and the lowest in financial services.

Regarding full-time equivalent employees, we analyze some organizational and employee variables, namely payroll, benefits, medical, paid time-off and human resources function operating expenses. In relation to payroll expenses, the maximum increase is found in the banking and finance sector, whilst the minimum is observed in the insurance sector. Additionally, FTE employees are positively significant in several sectors, specifically in all the manufacturing super-sector, in the durable goods manufacturing sector and in the non-durable goods manufacturing sector. When we consider benefits expenses, we find that the highest increase is produced in the non-durable goods manufacturing sector. Additionally, this variable is significant, so in the case of this sector,

Table 5
Elasticities

	Full-Time Equivalents Related to Groos Sales/ /Ravenue	Full-Time Equivalents Related to Operating Expense	Payroll Expense Related to Full-Time Equivalents	Benefits Expense Related to Full-Time Equivalents	Medical Expense Related to Full-Time Equivalents	Paid-Time Off (PTO) Expense Related to Full-Time Equivalents	Full-Time Equivalents Related to Temporary and Contract Workers Expense	Human Resources Function Operating Expense Related to Full-Time Equivalents	Human Resources Function Operating Expense Related to Gross Sales/ /Revenue	Human Resources Function Operating Expense Related to Operating Expense	Manpower Expense Related to Groos Sales/ /Revenue	Manpower Expense Related to Operating Expense
Profit Status												
Profit Organizations	0.802	0.376	0.916	0.910	0.941	0.922	0.447	0.735	0.673	0.585	0.784	0.727
Non-profit Organizations		0.383	0.933	0.980	0.980	0.961	0.355	0.613		0.475		0.658
Industry Super-Sector												
All Manufacturing	0.773	0.391	0.947**	0.873	1.025	1.190	0.532	0.785	0.798	0.426	0.619	0.814
All Non-Manufacturing	0.803	0.398	0.917	0.930	0.923	0.956	0.429	0.619	0.639	0.551	0.870	0.721
Financial Services		0.268	0.938	1.015	1.025	0.600	0.304	1.023		0.551		0.452
Industry Sector												
Durable Goods	0.719	0.396	0.942**	0.811	1.027	1.184	0.509	0.802	0.812	0.390	0.521	0.770
Manufacturing Non- -Durable Goods	0.849	0.283	0.917***	1.158*	1.035	1.080*	0.681	0.739	0.670	0.776	0.798	0.993*
Manufacturing Utilities and Energy	0.665	0.359	1.193	0.761	0.922*	1.183	0.274	0.818	0.728	0.703	0.874	0.799
Retail and Wholesale Trade	0.899	0.553	0.745	0.852	0.668	0.689	0.493	0.677	0.829	0.209	0.974	0.650
Services	0.848	0.441	0.943	0.953	1.022	0.921	0.545	0.582	0.529	0.553	0.879	0.729
Health Care	0.653	0.265	0.969	0.894	0.698	1.031	0.130	0.619	1.124***	0.786	0.834*	0.768
Banking and Finance		0.466	1.054	1.083	1.160**	0.610	0.436	1.392		0.598		0.434
Insurance		0.148	0.736	0.792	0.827	0.299	0.123	0.635		0.530		0.454

* Significant at the 10% level. ** Significant at the 5% level. *** Significant at the 1% level.

benefits expenses are explained by full-time equivalents. At the same time, the lowest movement is observed in the retail and wholesale trade sector. With respect to medical expenses, the largest incremental increase in relation to FTE employees is found in the banking and finance sector, with the variable being significant. This significance is also observed for the utilities and energy sector. The minor slope is located in the retail and wholesale sector. In relation to paid time-off expenses, the largest increase is found in all the manufacturing industry super-sector, more specifically in durable goods manufacturing, whilst the smallest increase is observed in the financial services super-sector, more precisely in the banking and finance industry sector. Attention should be drawn to the significance of the variable for non-durable goods manufacturing. Finally, when we analyze the human resources operating expenses variable, the largest increase is observed in the banking and finance sector, whilst the services sector shows the smallest increase.

As a final observation, the relationship between FTE employees with respect to temporary and contract workers expenses shows its maximum increase in the non-durable goods manufacturing sector, whilst the minor scope is presented in the insurance sector.

As a closing comment on the elasticities, the analysis presented in this study is a measure of the relationship between and organizational scope factor (such as sales/revenue) and a employee related factor (such as the total number of full-time equivalents) or the relationship between two employee-related factors. As such, it represents a useful and simple methodology for practitioners when making direct comparisons between various organizational scope factors and employee-related factor relationships involving comparable organizations.

Conclusions and policy implications

In this paper, we have carried out an evaluation of workforce efficiency in the United States using a professional data base, namely the ECS Survey on Workforce Efficiency (2000/2001), which includes responses of 453 organizations covering 1,685,336 employees. To that end, we measure employee efficiency of US organizations, differentiated by profit status, industry sector and employee size, using expenses indicators.

After first presenting some results according to the profit status, industry sector and employee size variables, we have obtained a number of elasticities. Thus, as regards profit status, we have concluded that the compensation package of both profit and non-profit organizations exhibit similar levels. The differences are observed in relation to benefits expenses, which are concentrated in non-profit organizations. As regards operating expenses, we have found that all ratios are higher for non-profit organizations.

With respect to the industry sector, we have found that the highest rate values in relation to the complete compensation packages are concentrated in both the banking and finance and the utilities and energy sectors. Whilst the cash compensation part maintains its highest percentage in the banking and finance sector, the percentage relative to benefits is located in the utilities and energy sector. This latter pattern has also been observed in relation to operating expenses. This analysis

reflects the upsurge of the telecommunications sector during recent years and, more specifically, the fact that its employees have been overpaid, particularly with respect to benefits policies.

As regards organization size, we have noted that the highest concentration of complete compensation package is located in the larger organizations. When cash compensation and benefits have been analyzed separately, it has emerged that the highest levels of cash compensation are found in smaller organizations, whilst the percentage of benefits are concentrated in larger organizations. This observation can lead us to assume that the total compensation package is higher in these latter organizations, with a high specific weight in the benefits items, a finding that is consistent if our measure is taken as the relationship between benefits expenses/payroll expenses with respect to benefits competitiveness.

Finally, the elasticities allow us to conclude that in the health care sector variables such as human resources operating expenses are explained by gross sales revenue, implying that a variation in gross sales revenue has a positive impact on these expenses. This same pattern is followed by FTE employees in the manufacturing super-sector with respect to payroll expenses. As regards benefits expenses, we have found that the FTE employees variable is significant for the durable goods manufacturing sector. Turning to medical expenses, the largest incremental increase in relation to FTE employees has been found in the banking and finance sector, with the variable, furthermore, being significant. This significance has also been noted for the utilities and energy sector. In relation to paid time-off expenses, attention should been drawn to the significance of this variable for non-durable goods manufacturing.

In closing, let us consider the policy implications that emerge from our empirical findings. However, before doing so, we must first consider precisely what results have emerged from this study and the direction that these are taking us. As regards the first aspect, we would argue that these results represent a new framework for the continued development of information, policy and programs that will ensure both continued industrial development and full employee utilization in the US. Currently, it may well be difficult to appreciate the contribution that can be made by such a process-based system for industry information. However, we should recall that we are dealing with an economy with an increasingly important service sector that needs to be nurtured and further developed. Look at the unexplored impact of recent technology changes and consider the gains that flow from an increased ability to define new production and employment opportunities. Take into account the fact that a dynamically changing economy must be able to offer its citizens education or programs to develop skills so that they can fully exploit new job opportunities. Existing workers should have mobility opportunities based on the recognition that skills are not tied to a particular industry or job title. These new strengths depend upon developing and using the kinds of information and analyzes that can keep workers, educators, employers and employee program administrators abreast or ahead of changing conditions. Whilst this will not happen overnight, these new systems are now being put into use and are the right answer for guiding the US economy into the new century.

Although it is still too early to point to realized benefits, some gains from the new framework for occupational analysis can be anticipated. First and foremost, more informed policy atten-

tion will be directed towards changing job conditions, availability, and impacts in the US economy. Intra and inter-industry skill requirements will be better defined, with future education and training programs contributing to enhanced worker mobility and increased employer willingness to hire from outside the traditional industry patterns of requirements. Changes at industry level will be better satisfied by the increased mobility opportunities enjoyed by workers. Over the long-term, the role of work in defining socioeconomic status will be diminished in favor of increasing the economic importance of an individual's education and the planned acquisition of skills.

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Resumo. O objectivo deste artigo é realizar uma avaliação da eficiência dos empregados nos Estados Unidos, pelo que se usa uma base de dados profissional, em concreto o Survey ECS sobre Eficiência da Força de Trabalho (2000/2001), conduzido pela Watson Wyatt, e que inclui respostas de 453 organizações e 1,685,336 empregados. Tendo em mente este objectivo, medimos a eficiência da força de trabalho de organizações americanas, utilizando um conjunto de indicadores de investimento para categorizar a informação de acordo com os lucros, sector industrial e dimensão da organização segundo o número de empregados. Os nossos resultados revelam que as novas forças do emprego irão depender do desenvolvimento e aplicação de tipos específicos de informação que permitam a trabalhadores, educadores, empregadores e gestores de programas de emprego, fazer frente às mudanças no ambiente.
Palavras-chave: Força de trabalho, eficiência, indicadores de investimento.