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The Impact of Changing Economic Conditions on United States Army Recruiting Trends

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Note: The views and opinions presented herein are solely those of the author and are not reflective of U.S. Army policy or privileged information/data.

ABSTRACT

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The factors that lead an individual to enter into the U.S. Army are marked by a diverse range of internal and external circumstances. Most recently, heightening of concerns regarding unemployment rates, mortgage foreclosures, and business failures has led many Americans to re-evaluate more stable employment opportunities within every segment of the public sector, to include the United States Army. In assessing Army enlistment rates, this research analysis focused on how shifts in the economy, and associated economic indicators, relate to the effectiveness of Army recruiting efforts. To accomplish this, historical data for the Dow Jones Industrial Average (DJIA), Standard & Poor's 500 (S&P 500), the Bureau of Labor Statistics (BLS) monthly unemployment rates, and the United States Gross Domestic Product (GDP) were analyzed in relationship to annual, and annual-lagging, Army recruiting goal achievement. Ultimately, annual (and annual-lagging) Army recruiting goal achievement was determined to have a statistically significant inverse relationship with annual GDP and, to a lesser degree, the S&P 500; these findings suggest that both economic and environmental factors have an impact on Army recruiting outcomes. This study should serve as a reference point for further study of both specific Army recruiting policy development and general analysis of unexplored economic influences on personal-human decision-making.

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1. Introduction

Today's war-time United States Army has over 500,000 Soldiers serving within the active-duty force structure. In the 2008 Posture Statement, the Army Chief of Staff outlined the stresses of ongoing deployment operations on military personnel management and recruitment of new troops. In this way, he emphasized the major enduring objective of Army leadership to increase the size of our Army in order to provide more down-time and training-preparation between deployments for Soldiers and respective family members. A subsequent congressional approval for increased manpower authorizations within the Department of Defense (DOD) indicates that Army leaders will be planning to magnify recruiting efforts and associated strategies in the foreseeable future (Army Knowledge Online, 2008).

The dichotomy of ongoing war-time deployments and a constrained domestic economic climate make retaining and recruiting new Soldiers for service in the Army a uniquely complex problem-set. While some individuals will decide to stay away from voluntary military service or enlistment because of ongoing war-related deployment obligations, others may select a career in the Army as safe-haven from unemployment in a limited job market. Concurrently, a range of other personal recruitment decisions – to include educational opportunities, patriotism, and family tradition – will continue to influence Army recruitment success. Within the context of changing economic conditions, Army leaders would be prudent to evaluate, and strategically capitalize upon, an in-depth

historical analysis of manpower or recruitment surge implementation efforts from past decades.

Since 1974, the Army has maintained comparative data on total recruiting mission [goals] and results during each fiscal year. Army leadership resets the Army recruiting mission each year based on needs of the Army, strategic objectives, budgetary constraints, and environmental conditions. This data subsequently serves as a benchmark for Army recruiters in establishing localized goals, making team projections, and understanding how these efforts fit into the broader Army strategic plan. To accomplish the goal, Army recruiting commands across the nation are allocated Department of the Army (DA) budget dollars to provide incentives for potential recruits; key incentives include educational benefits and enlistment bonuses (Kearl, et al.; U.S Army Recruiting Command, Available Online). Typically, the depth and value of these incentives are derived from the competition generated within scope of the broader economy.

This research study provides analysis on how current and historical economic trends relate to the decision to enter military service. Notably, findings can provide critical insights on various issues related to Army recruitment and how an awareness of domestic economic health can be cultivated to shape the Army's future force structure. Associated research initiatives could explore enlistment decision-making criteria, patriotism vs. individualism, effectiveness of recruiting strategies, and market psychology. Incidentally, external factors that impact Army enlistment decisions should also be considered; such factors include perceived war conditions in Iraq or Afghanistan, domestic terrorist threat

levels, political leadership priorities, government economic stability efforts, and quality of Army enlistment incentives[1].

2. Literature Review

Past research on the effectiveness of Army recruiting suggests that various indicators are related to changes in Army enlistment rates over time. This literature review assesses previous research on Army recruiting, United States economic conditions, market factors, unemployment rates, demographic data, and critical political events. In this way, the cumulative analysis of past research works to isolate variables for shaping hypotheses during secondary research execution; Army leaders or recruiters may utilize findings of this study to forecast and prepare for changing economic and environmental conditions.

(II.A) Army Recruiting

Kearl, Horne, and Gilroy (1990) assert that the effectiveness of Army recruiting efforts is the result of a combination of broad economic conditions and internal Army budgeting constraints. To this end, changes in the job market at large and the dollar total that the Department of the Army (DA) allocates for recruiting are the key components in projecting how well the Army will do in quality and quantity of recruits in any given year. Furthermore, the researchers argue that total Army recruiting goals and successes are not absolute indicators of the health of the Army or broader economy. Changes in Army priorities, new recruit acceptance standards, and political budget allocations also have

[1] Most recently, the 2008 Army Posture Statement points out that Army Reenlistment incentives are at an all-time high with increased benefits provided through congress-led cash bonus and educational opportunities. In fact, August 2009 signifies the start date for the most comprehensive GI Bill in United States history. Depending on local and school factors, the new bill enables enlistees, veterans, and family members to receive fully funded college education and housing allowances for in-state schools. (AKO, 2009).

significant impact on how the quality and volume of Army recruiting is shaped. Accordingly, the study's research design is comprised of a multi-variable analysis that includes data comparisons for demographics (American males, 16-21 years old), employment trends, real earnings, and Army recruiting resources made available through congressional (political) decisions on military leader recommendations.

The primary demographic data considered for the focus group, the 16-22 year-old American male, includes results from the Armed Forces Vocational Aptitude Battery (ASVAB), high-school class standing, and youth population trends. While the ASVAB works to provide testing information on an individual's potential for placement in the Armed Forces, the high-school class standing statistics shed light upon the past success of a recruit. Youth population data was also used to project the availability of males in the 16-22 year old age bracket during a given recruiting year. Overall, these statistics are presumed to serve as an indicator of the quality, and availability, of a potential Army recruit. Researchers have consistently found that during poor economic time-periods, with favorable enlistment age-range population demographics, the Army is much more likely to heighten acceptance and retention standards for Army recruitment goals (Cowan, 2008; Quester, 2005; Kearl, Horne, & Gilroy, 1990). This is a key consideration when assessing the effectiveness of the Army recruiting program through a singular analysis of the achievement of the annual published goal. That is, the achievement of the set goal is not an ultimate factor of success; analysis must take into account adjusted [raised or lowered] expectations for recruiting volume and quality in significantly changed economic or demographic environment. For a true indicator, the quality of recruits and specific Army

standards must also be determined to conclude that an annual recruiting campaign has been effective relative to comparable historical trends.

Similarly, a second set of variables evaluated in this study included employment trends in the United States economy. In considering unemployment rates and real wage comparisons for this male age-group, researchers found that lower unemployment and better real wage opportunities for young men was closely linked to declines in Army recruiting success (Kearl, Horne & Gilroy, 1990; Quester, 2005). This effect was most significant in the highly sought after recruiting group, new recruits that score in the upper 50th percentile on the ASVAB. Between 1986 and 1988, for instance, quality recruits entering the Army declined from 62,000 to 49,000, respectively.

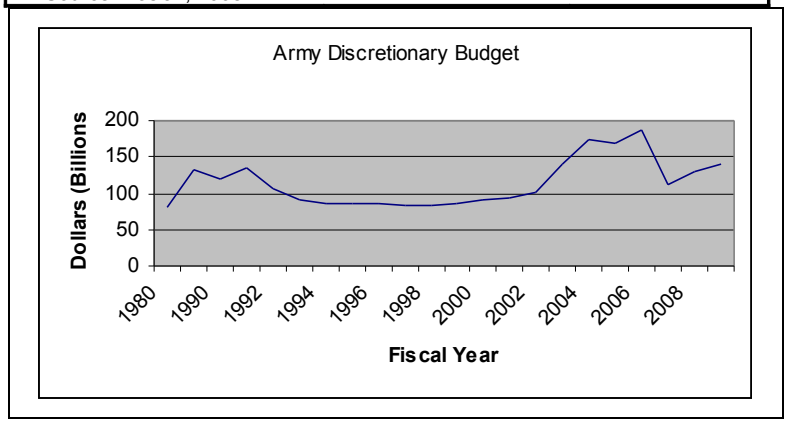
To this end, a third set of variables considered was the total dollar allocation for the Army recruiting budget. Following recruiting goal shortfalls in the late 1980s, Army resource management branch allocated increased funds for spending on recruitment incentive packages, to include education and bonus benefits. Combined with a significant lowering of recruiting expectations, the Army was finally able to achieve recruiting goals during the early 1990s. This suggests that during economic peak periods, such as the early 1990s, the Army could have worked more quickly to respond to changing events and internal expectations. As indicated by historical data, budgetary allocation decisions by political leaders are often driven by world events and perceived threat to national defense (Kosiak, 2008). While budget increases may not always be a directly related means of changing recruitment levels, it could work to counter some of the effects of a changing [or diminishing] competitive advantage within the context of the larger economy[2].

Army [Discretionary] Budget (Historical Data)

[2]

Year	Current $ (Billions)	FY 2009 $ (Billions)	% Total Budget
1980	34.4	80.5	24%
1985	74.3	132.6	26%
1990	78.5	120.1	27%
1991	91.8	135.4	29%
1992	73.6	105.9	26%
1993	64.8	91.2	24%
1994	62.4	85.9	25%
1995	63.3	85.3	25%
1996	64.5	85.4	25%
1997	64.4	83.8	25%
1998	64	82.3	25%
1999	68.4	86.7	25%
2000	73.2	91	25%
2001	77	93.6	25%
2002	85.9	102.4	25%
2003	121.1	141.5	28%
2004	153.1	174.3	33%
2005	152.8	168.6	31%
2006	174.9	186.8	33%
2007	108.6	112.9	25%
2008	128.4	131	27%
2009	140.7	140.7	27%

*Figures exclude war-related funding
**More complete data to follow in final manuscript
***Source: Kosiak, 2008



From a critical perspective, there are several limitations to this study. First, findings should not be generalized beyond the analysis of males between the ages of 16 and 22. While this group certainly is representative of the target group for Army recruiters, it fails to acknowledge the diversity of Americans that enter the military. In fact, some Army specializations require advanced certifications by older individuals or are heavily populated by female Soldiers. This suggests that the study does not take a comprehensive approach to the analysis of the Army recruiting environment. A future study may break-down recruit

demographics further to include race, broader age-gender ranges, and other lifestyle factors.

Second, the study does not account for regional differences in recruiting efforts which make economic shifts difficult to generalize for Army recruiting initiative across the country. For instance, there may be certain regions in the United States that have not been as impacted by changes in economic conditions or uniformly tend to provide more viable recruiting options. Similarly, an industry specific down-turn in a manufacturing center may create a change in localized or regional recruiting efforts during a given period.

Third, the study does not account for the limitation inherent in changing Army recruitment goals or standards. It is possible that changes in difficulty or emphasis of exam version for the ASVAB make comparison of quality recruits over time inaccurate; certainly, it would be difficult to ensure a uniformly complex exam-set over a 33-year period. Accounting for these changes within the study findings may have worked to show a result that suggested more stability (or greater volatility) in Army recruit skills during changing economic periods. With no clear records of how testing material has changed over time, it would be inaccurate to make direct comparisons for the entire period of analysis.

Morgan (2001) argues that changes in cultural norms and differences between the military and United States society have strained Army recruiters to leverage tangible resources in sustaining a competitive advantage during good economic times. He concludes that while the Army was able to largely achieve recruiting goals through the booming economic times of the 1990s, much of this success can be attributed to significantly higher Department of the Army budgetary expenditures, increased recruiter

workforce, and compromises on core military values. This is supported by data that shows the Army increased recruitment advertising spending from $34M to over $112M between 1993 and 1999, respectively. Furthermore, dedicated recruiting manpower increased from over 4,300 to 6,300 in this same time period. Morgan suggests an Army that must spend significantly more and allocate increased levels of manpower and recruitment incentives to draw recruits to the military service cannot champion the achievement of recruitment goals as a true success. To the contrary, he posits that the Army, and American culture, should assess ways to better align the military with modern American values to increase recruiting efforts in an indirect, less forceful way. This suggests that a changed image for the Army, and a broader scope of recruiting efforts, could work with other plans to mitigate the vulnerabilities to recruitment quality that result from a strong United States economy.

On the other hand, Morgan fails to acknowledge the inherent differences between a volunteer and drafted military. A volunteer military will typically self-select a specific subset of the American population. In many ways, it benefits society to have a military with values that differ from the broader society. For one, it enables military commanders to train Soldiers for combat and wartime demands; both of which require preparation that is not conducive to modern-day American life. Furthermore, a force that has unique values can be better postured for the organizational identity and teamwork demands of a wartime environment; it is important that Soldiers can identify with the Army as a unique institution through deployments and separations from family members.

Morgan also overlooks other factors that may have played a significant role in improving recruiting efforts during the 1990s. In the post Gulf-War era, for instance, President Clinton worked diligently with policymakers to down-size the United States

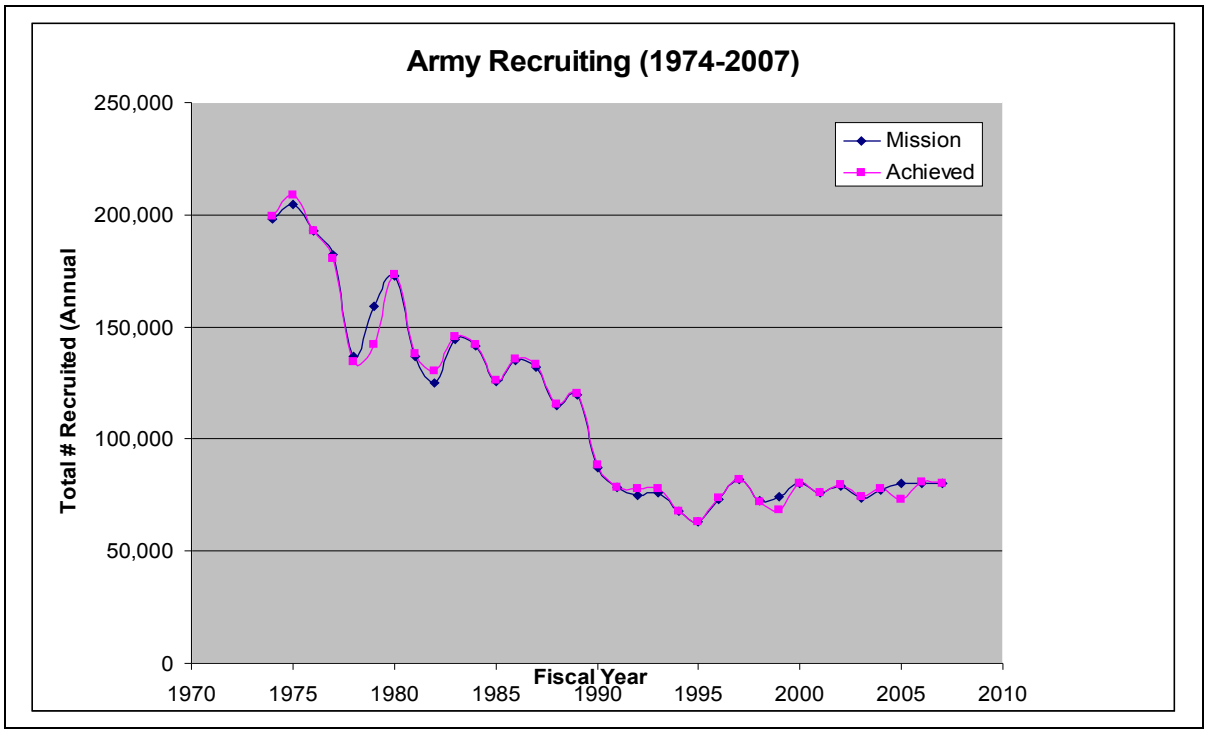
military (Quester, 2005). These conditions aligned well with lower Army recruiting goals and increased funds for spending on recruiting for each potential recruit. Incidentally, a smaller requirement for military manpower during this period, combined with more discretionary dollars to spend on recruitment, must be considered when analyzing improved results for Army recruiters. Comparative challenges associated with this difference, however, may be mitigated through a manipulation of raw data to ensure comparable terms in a longitudinal analysis.

More recently, the 2005 Supreme Court decision in *Rumsfeld versus the Forum for Academic and Institutional Rights (FAIR)* has further expanded access of college campuses to Army recruiters. In this way, some of the most prestigious academic institutions that receive certain federal fund now are obliged to allow Army recruiters to the same access as other potential employees. As a stand-alone initiative, this provides the Army with little benefits in its broader recruiting efforts for enlisted Soldiers; enlistment rates are largely driven by high school graduates that would seek to serve in the Army prior to, or instead of, seeking a college education (Kearl, Horne, & Gilroy, 1990; Quester, 2005). However, Lindemann (2006) asserts that tapping into students at top-tier universities could work to steal away talent which may serve to broaden the demographics of the Army officer corps and filter down to attracting higher quality Soldiers at all points of entry into military service. While this concept would require more study and thought, it seems reasonable to assume that increased funding for programs in legal, medical, and other professional-research oriented fields would attract both college talent and better overall enlisted recruits, especially during economic down-cycles.

Still, the Lindemann (2006) findings do not provide adequate research to support these claims. He cites few previous studies that have indicated a benefit to the military recruitment process derived from access to top-tier university officer candidates. In addition, it would be very difficult to demonstrate causality in a study that attempts to assess the relationship between quality of officer selection and Army recruitment rates. While officer recruitment follows a long-term development process prior to matriculation into the Army, enlistment recruitment follows a much larger scale, acute selection process based on eligibility (United States Army Recruiting Command [available online], 2008). There is no direct relationship between these two variables, and therefore, a range of spurious relationships would leave the thesis open to dispute the possible causes for changes in enlistment recruitment success.

Recruiting Success over Time

Chart II.A.1

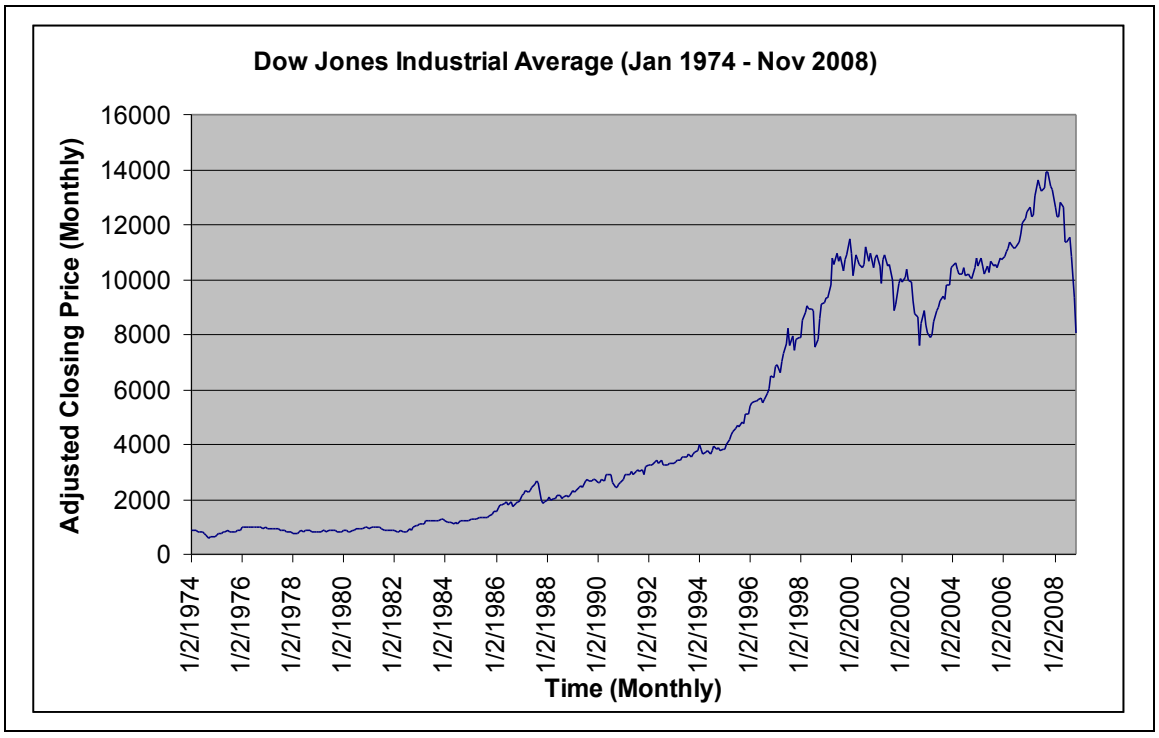


Between 1974 and 2007, the Army failed to meet recruiting goals during seven fiscal years; 1977-1979, 1995-1996, 1999, and 2005. Overall, this data should be scrutinized and evaluated with an understanding that changing government-led recruiting goals, Army size, demographics of recruits, and perception of the military all have worked to shape fluctuations in the achievement of the intended Army recruiting mission requirements (Army Posture Statement, 2008). With this, recruiting-goal achievement data should not be analyzed as an absolute longitudinal comparison over time. Other economic factors, to include unemployment and market indexes, can work to mute the impact of changing environmental factors and smooth the data to provide more comparable results over time.

DJIA and S&P 500: Change Over Time

II.B Economic Conditions

Chart II.B.1

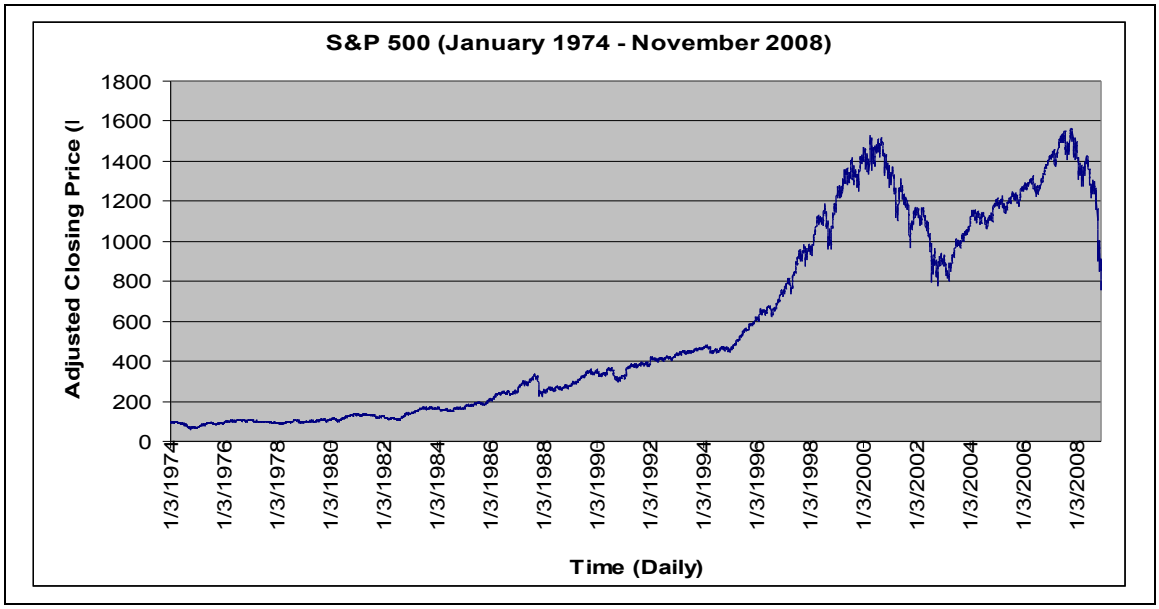


Between 1974 and 2008, an analysis of adjusted monthly closing prices for DJIA companies could be used to show a relationship between DJIA health and Army recruiting success. Specifically, there are eight time periods that should be considered (see also: historical DJIA chart above). First, DJIA price declines between January 1974 and October 1974 represented nearly a 25% decrease in average company values. Second, DJIA price declines between Jan 1977 and April 1978 represent a 26% decline. Third, the stock market crash of 1987 resulted in nearly an 800 point decline for the DJIA. Fourth, DJIA price declines between July 1990 and November 1990 represented a 21% value decrease. Fifth, DJIA price declines between April 1998 and September 1998 represented

a 15% value decrease. Sixth, the Enron scandal, dot-com bubble-bust, and terrorist attacks on the World Trade Center resulted in a 21% decline in DJIA value between April 2001 and September 2001. Seventh, the DJIA decreased, amidst high levels of volatility, between March 2002 and February 2003. Lastly, and most recently, the global economic crisis has resulted in a 73% total decrease in DJIA value between a high in September 2007 to November 2008.

In utilizing the DJIA to gauge market conditions, past research show that the index can sometimes exaggerate fluctuations and impacts on American businesses. When the market increases or decreases, the DJIA often moves at a rate which indicates a change that overcompensates for real-time economic conditions (Hensley et al., 2001). This suggests that recruiters should be careful in using movements in the DJIA as the sole indicator of market conditions. In most cases, analysis of the broader market would best be served through combining research on the DJIA and the S&P 500. Incidentally, the depth of companies analyzed by the S&P 500, especially when compared to the DJIA, may ensure that regression to the norm allows for an average effect on stock values that provides a more precise insight into overall market conditions.

Chart II.B.2.

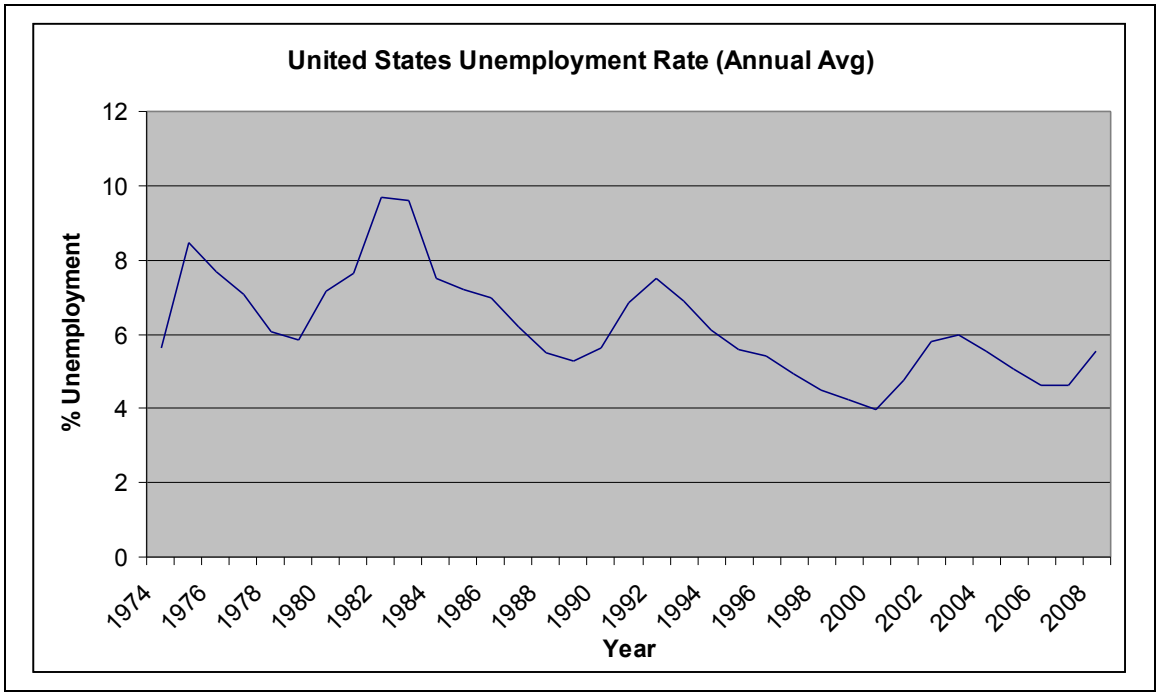


Similarly, between 1974 and 2008, trends in the adjusted average closing prices for S&P 500 companies can be used to determine a relationship between Army recruiting efforts and the economy. In contrast to the DJIA, the S&P reflects a less volatile index and is in many ways a more complex, broader indicator of market health; there are only five major economic value shifts that should be analyzed for the S&P 500 [as such periods relate to Army recruitment efforts]. First, the S&P 500 value declined by 33% between

March 1974 and September 1974. Second, S&P 500 companies decreased in value by over 30% between December 1980 and July 1982. Third, the 1987 stock market crash led to a decline of over 40% between August 1987 and November 1987. Fourth, during a prolonged dot-com bubble bust and terrorist attack-related decline, the S&P yield a 65% loss in value between August 2000 and August 2002. Lastly, recent economic volatility and global mortgage crisis has led to a nearly 90% loss in S&P value between October 2007 and November 2008.

Unemployment Rate: Change Over Time

Chart II.B.3.

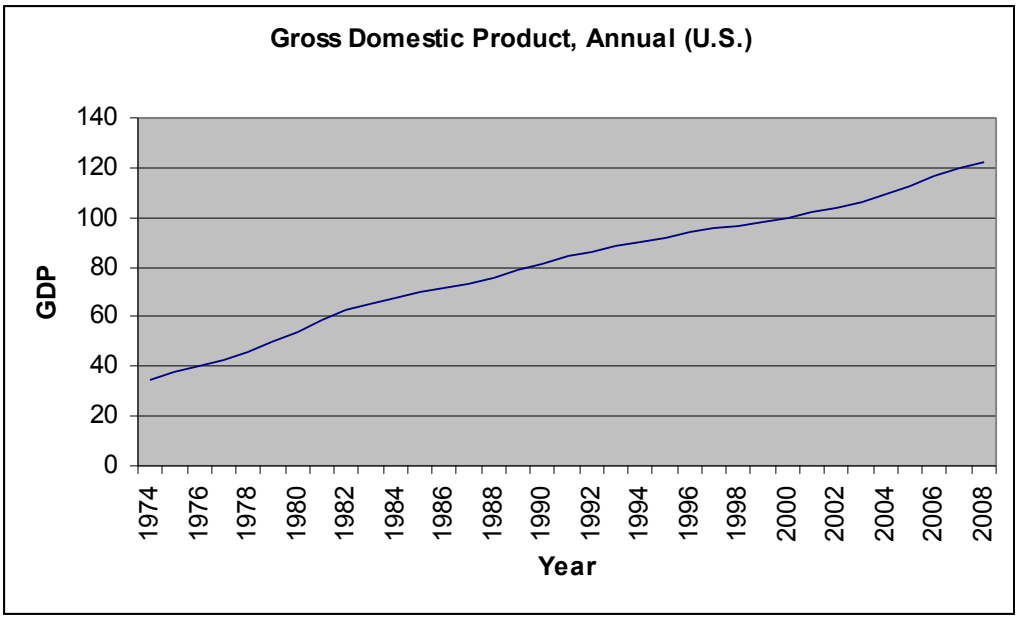


Between 1974 and 2008, annual unemployment rates can be analyzed with respect to Army recruiting success during five peak periods. A baseline analysis of the chart above depicts these periods clearly as 1976, 1983-1984, 1993, 2003, and 2008.

In evaluating the unemployment rate as an indicator for increased or decreased opportunities for Army recruiters, it is important to consider weaknesses of this metric. Past research on the unemployment rate has suggested that discerning the absolute unemployment rate should include those that have been determined to be no longer in the job market; this segment of the population is not computed as part of the unemployment rate and the factors for defining such possible employees has remained fairly stable over time (Aaronson, et. al., 2006; Barrow, 2004; Mosisa & Hipple, 2006). The labor force participation rate concept defines these individuals as "the proportion of the working-age population not working and not actively seeking work" (Mosisa & Hipple, 2006). Another population segment to consider are those "under-employed" workers whom may be indirectly spurred to enter the military during times of higher unemployment. Certainly, marginally employed [under-employed] and labor force non-participant persons both could more easily be recruited by the military during poor economic periods or the announcement of a higher unemployment rate.

Gross Domestic Product (GDP): Change Over Time

Chart II.B.4.



The Gross Domestic Product (GDP) represents a key economic indicator for employment opportunities, both for the economy at large and within specific sectors. Economists monitor GDP to evaluate end-state production across the spectrum of goods and services produced within the United States each year as a means to project employment opportunities. The key evaluation criteria for production include: personal consumption expenditures, gross private domestic investment, government purchases, exports, and imports (Bureau of Labor Statistics, 2009). For this study, GDP is a critical consideration for determining the market-driven factors that lead job-seekers into specific career fields, to include the military service.

Literature Review Position

Ultimately, previous research depicts a complex set of unexplored considerations for analyzing the relationship between Army recruiting trends and United States economic conditions. In this study, accounting for multiple indicators of both Army recruitment goal success and economic health are major factors for adding critical insights to the existing

body of research. In evaluating recruitment success, analysis of the decision-points related to the annual Army recruiting goal remains paramount; these decision points include political agenda or congressional support, Army budget allocations, and demographic trends for enlistment-age Americans.

As for broad economic health, isolating the sensitivities [and associated causes for volatility] of the major United States market and employment indicators within the scope of historical economic conditions [and events] provides an innovative approach to understanding the impacts on Army recruiting. Accordingly, a comprehensive perspective on the implications of longitudinal Army recruiting statistics as they relate to the DJIA, S&P 500, the United States unemployment rate, and the Gross Domestic Product (GDP) should provide a significant conceptual framework for key hypotheses.

3. Data

The health of the United States economy can generally be gauged by the value of United States businesses, as indicated by major stock indexes (Saunders & Cornett, 2005). The DJIA is comprised of the top 30 blue chip stocks[3] in the United States. The financial position of DJIA companies like Citigroup, Procter & Gamble, and Pfizer are often cited as reference points for predicting overall market conditions (Dow Jones Indexes, Available

[3] Blue chip stocks are those shares of publicly held companies that are selected as the largest corporations with a history [and prospects] of growth (Saunders & Cornett, 2005).

Online). In this study, the DJIA can be used to explore the activity of a small number of the largest publicly-traded employment institutions in the United States. Often, the DJIA is most sensitive to changes in domestic and global market conditions and will move prior to, and during, major economic events (Saunders & Cornett, 2005). These companies work to provide a reasonable comparison-group to the large scale recruitment practices and associated strategic plans that must be employed by the United States Army.

From a broader perspective, the S&P 500 reflects the strength of over 500 United States companies. These companies represent a wide spectrum of industry leaders across various United States markets (S&P, Available Online). S&P 500 companies vary greatly in business models and industry-specific markets. For this reason, S&P 500 volatility is typically much more stable than the DJIA and moves only during the most sensitive or drastic economic events. For this study, these companies can be looked at from a wide-ranging perspective to isolate a finite set of economic changes over a longer period of time [relative to the DJIA].

Taken together, the DJIA and S&P 500 provide invaluable insights into United States economic activity cycles and how associated strength can be assessed on multiple levels. Besides providing an assurance of overall economic condition accuracy, these indexes can be used to provide both continuous [DJIA] and discrete [S&P 500] data points, respectively. In conjunction with the BLS unemployment rate and Gross Domestic Product (GDP) for United States workers, these indexes can be used to compare, contrast, and analyze the determinants of Army recruiting outcomes (BLS, Available Online).

Impact of Changing Economic Conditions on United States Army Recruiting Trends

Year	Army Mission	Recruiting Achieved	% above Mission	DJIA	S&P	Unemployment	GDP	Nikkei
1974	**198,000**	**199,196**	**0.60%**	860.53	96.22	5.64	34.72	
1975	**204,600**	**208,915**	**2.11%**	846.68	93.98	8.48	38.01	
1976	**192,600**	**193,024**	**0.22%**	980.56	102.89	7.70	40.20	
1977	**182,200**	**180,718**	**-0.81%**	870.44	96.41	7.05	42.76	
1978	**137,000**	**134,428**	**-1.88%**	819.75	96.35	6.07	45.76	
1979	**159,200**	**142,146**	**10.71%**	846.29	104.51	5.85	49.55	
1980	**172,800**	**173,228**	**0.25%**	901.18	120.86	7.18	54.06	
1981	**136,800**	**137,916**	**0.82%**	926.35	127.08	7.62	59.13	
1982	**125,100**	**130,198**	**4.08%**	907.20	122.35	9.71	62.74	
1983	**144,500**	**145,377**	**0.61%**	1209.94	162.23	9.60	65.21	
1984	**141,753**	**142,316**	**0.40%**	1180.71	161.67	7.51	67.66	10809.08
1985	**125,300**	**126,443**	**0.91%**	1369.49	191.65	7.19	69.72	12707.92
1986	**135,250**	**135,531**	**0.21%**	1864.02	244.11	7.00	71.27	17313.92
1987	**132,000**	**133,016**	**0.77%**	2256.71	284.57	6.18	73.20	23448.17
1988	**115,000**	**115,386**	**0.34%**	2109.35	271.42	5.49	75.71	28052.25
1989	**119,901**	**120,558**	**0.55%**	2556.41	328.95	5.26	78.57	34974.92
1990	**87,000**	**88,617**	**1.86%**	2674.39	333.92	5.62	81.61	27668.08
1991	**78,241**	**78,241**	**0.00%**	3004.95	386.94	6.85	84.46	24265.17
1992	**75,000**	**77,583**	**3.44%**	3303.59	419.62	7.49	86.40	17678.83
1993	**76,000**	**77,563**	**2.06%**	3593.32	457.02	6.91	88.39	19322.83
1994	**68,000**	**68,063**	**0.09%**	3781.65	459.73	6.10	90.27	19877.75
1995	**63,000**	**62,967**	**-0.05%**	4663.48	560.68	5.59	92.12	17478.50
1996	**73,400**	**73,528**	**0.17%**	5898.28	687.36	5.41	93.86	20804.50
1997	**82,000**	**82,087**	**0.11%**	7528.69	892.04	4.94	95.42	18151.00
1998	**72,550**	**71,749**	**-1.10%**	8731.23	1112.80	4.50	96.48	15098.68
1999	**74,500**	**68,210**	**-8.44%**	10606.59	1340.15	4.22	97.87	17368.77
2000	**80,000**	**80,113**	**0.14%**	10683.61	1417.36	3.97	100.00	16430.62
2001	**75,800**	**75,855**	**0.07%**	10059.31	1166.10	4.74	102.40	11666.83
2002	**79,000**	**79,604**	**0.76%**	9025.45	965.71	5.78	104.19	9928.86
2003	**73,800**	**74,132**	**0.45%**	9220.77	990.88	5.99	106.41	9493.42
2004	**77,000**	**77,587**	**0.76%**	10326.12	1138.14	5.54	109.46	11282.71
				10560.	1216.0		113.0	13033.8

[Chart Footnote][4]

4. Methodology

As previously indicated, the primary objective of this study is to analyze the relationship between United States economic conditions (reference: associated indicators) and Army recruiting effectiveness. In assessing this relationship, a series of multiple and individual, single regression analyses were conducted. Notably, regression analysis was evaluated by assessing recruiting totals in two ways:

1. Regression analysis of Army Recruiting Totals and the same-year relationship to United States economic condition indicators.
2. Regression analysis of the 1-year lagging Army Recruiting Totals and the relationship to United States economic condition indicators.

This methodology for regression analysis worked to ensure or assume that target population and potential Army recruits would need a "lag-time period" to assess the previous year's economic conditions and prospects to make an informed decision on Army enlistment.

The three model variations for regression analysis in this study included:

1. Individual-Single Variable Model. This model version evaluated the relationship between the outcome variable and each of the main predictor and 'other' predictor variables separately.

[4] Data Sources: Army Mission/Achieved: AKO, 2009; DJIA/S&P 500/Nikkei: Yahoo Finance, 2009; Unemployment Rate/GDP: BLS, 2009.

2. Multivariable Model. This model evaluated the relationship between the outcome variable and each of the main predictor variables taken together with interaction effects.
3. Lagging Multivariable Model. This model evaluated the relationship between the 1-year lagging outcome variable and each of the main predictor variables taken together with interaction effects.

5. Measures/Variables

Outcome Variable: Army Recruiting Totals: Annual.

Data for this variable was provided by the United States Army Recruiting Command (USAREC) and is illustrative of the total number of Soldiers recruited in each year following the conclusion of the Vietnam war-associated draft, 1974-2008 (USAREC, available online).

Main Predictor Variables:

A. **Dow Jones Industrial Average (DJIA): Annual Average Closing Value.** Justification also analyzed/discussed in section 3. This variable is descriptive of the average annual DJIA adjusted closing value; data-point is computed as the annual 12-month average closing for each year between 1974 and 2008.
B. **S&P 500: Annual Average Closing Value.** Justification also analyzed in section 3. This variable is descriptive of the average annual S&P 500 adjusted closing value; data-points are computed as the annual 12-month average closing for each year between 1974 and 2008.

C. **Unemployment Rate: Annual.** Justification also discussed in section 3. This variable is descriptive of the 12-month average of the BLS monthly report, as recorded between 1974 and 2008.

D. **Gross Domestic Product (GDP): Annual.** This variable is descriptive of the annual GDP as reported between 1974 and 2008.

Other Predictor Variable:

Nikkei 225: Annual Average Closing Value. This variable was selected to better gauge the relationship and associated analysis of the DJIA and S&P 500 indices. In this way, this variable is measured as the 12-month average adjusted closing for each year between 1984 (Nikkei 225 inception) and 2008.

Annual Army [Discretionary] Budget, 2009 Dollars. This variable was selected to evaluate how Army spending availability may impact recruiting totals. This variable was also selected to provide insight into how changing United States governmental and economic priorities may impact recruiting outcomes. To this end, the variable was defined as the annual total dollar allocation (in Billions of U.S. Dollars) between 1974 and 2008.

6. Results

Descriptive Statistics	Indiv. Predictors (Model V1)	Multivariable (Model 2)	Multivar w/lag (Model 3)
OUTCOME VARIABLE			
Army Recruiting Totals: Annual			
Intercept		239416.73 (23990)	236451.8 (24308.46)
R^2		0.88	0.875
Degrees of Freedom		30	29
PREDICTOR VARIABLES			
DJIA: Annual Adj Avg Close (Coeff)	-7.45 (1.23)**	20.26 (6.23)**	17.33 (6.51)**
T-Statistic	6.03	3.25	2.65
P-value	8.73E-07		
R^2	0.52		
S&P: Annual Adj Avg Close (Coeff)	-66.05 (10.5)**	-126.93 (54.62)**	-99.02 (57.03)
T-Statistic	-6.27	-2.32	-1.73
P-value	4.32E-07		
R^2	.5301		
Unemployment Rate: Annual (Coeff)	17670.23 (4351.7)	4574.33 (2813.21)	3895.76 (2828.79)
T-Statistic	4.06	1.62	1.37
P-value	0.00028		
R^2	0.31		
GDP: Annual (Coeff)	-1545 (130.29)**	-2258.59 (237.72)**	-2242.89 (240.80)**
T-Statistic	-11.86	-9.50	-9.31
P-value	1.9E-13		
R^2	0.80		
Nikkei 225: Ann. Adj Avg Close (Coeff)	.919 (.769)		
T-Statistic	1.19		
P-value	0.24		
R^2	.017		
Army [Discret.] Budget: Annual (Coeff)	68.19 (39.26)		
T-Statistic	1.73		
P-value	0.10		
R^2	.1007		
***** denotes statistically significant***			

Model 1: Individual, Single Variable Model (single predictor regression analysis)

Main Predictor: DJIA. Model 1 regression analysis is reflective of an inverse relationship between Army recruiting totals and the average annual closing value of the DJIA. More clearly, as the DJIA annually adjusted closing average rises, Army recruiting totals decrease during the same year. This finding is statistically significant (t-test score = 6.03). However, further analysis shows a relatively weak R^2 statistic (.52); this is suggestive of further evaluation through the inclusion of other possible predictor variables that are impacting the outcome (see also: model 2/3).

Main Predictor: S&P 500. Model 1 shows that an inverse relationship between the S&P 500 and Army Recruiting Totals that is statistically significant (t-test score = -6.27). The R^2 term (.53) indicates that approximately 53% of the variation in the outcome variable, annual Army recruiting totals, is explained by the S&P 500 relationship. This again leaves approximately 47% variability due to other correlated or causal factors.

Main Predictor: Unemployment Rate. Model 1 indicates a statistically significant positive relationship between unemployment rate and annual Army recruiting totals. However, a very low R^2 P-value of .00028 is indicative of a high degree of variability in this finding, and thus the relationship cannot be considered as reflective of a notable trend.

Main Predictor: GDP. Model 1 indicates a statistically significant inverse relationship between GDP and Army Recruiting Totals (t-test score = -11.86). This correlation is the strongest of all other model 1 regression analyses, with descriptive statistics that indicate a relatively strong relationship (R^2=.80, P-value=1.9E-13).

Other Predictor: Nikkei 225. Model 1 shows no significant relationship between the Nikkei 225 and annual Army Recruiting Totals. While the duration of this analysis is more limited than the other predictor variable analyses (Nikkei start date was in 1980), all descriptive statistics are reflective of no relationship between the two variables. This outcome was expected, as a foreign index should have no impact on American citizen decision regarding domestic economic conditions and Army enlistment.

Other Predictor: Army [Discretionary] Budget Allocation, Annual. Model 1 shows no significant relationship between Army [Discretionary] Budget allocation and Army Recruiting Totals. All descriptive statistics for this variable indicate that there is no relationship between the two variables.

Model 2: Multivariable Regression Analysis

Overall, the descriptive statistics for this model are indicative of a very good overall fit ($R^2 = .88$). This suggests that 88% of the variation in response to outcome variable (Army Recruiting Totals) can be accounted for through correlation by the main predictor variables.

Main Predictor: DJIA. Model 2 shows a statistically significant (t-test score=3.25) positive relationship between the DJIA and Army recruiting totals. This finding varies greatly (and inversely) from the single variable regression for the DJIA and Army Recruiting Totals. This suggests that the DJIA may not be a very good predictor of overall economic health or how such factor impact Army Recruiting trends.

Main Predictor: S&P 500. Model 2 shows a statistically significant (t-test score= -2.32) inverse relationship between the S&P 500 and Army Recruiting Totals. This aligns well

with the single-variable regression in model 1 for the S&P 500 and Army Recruiting Totals.

Main Predictor Variable: Unemployment Rate. Model 2 shows no significant relationship between the annual Unemployment Rate and Army Recruiting Totals. In assessing how this differs from model 1, this finding is appropriate in that the previously statistically significant outcome was not strongly correlated and had a low R^2 value.

Main Predictor Variable: GDP. Model 2 shows a strong significant inverse relationship between annual GDP and Army Recruiting Totals (t-test score = -9.50). This aligns well with the single variable regression analysis for GDP and Army Recruiting Totals in Model 1.

Model 3: Multivariable w/lagging Outcome Variable (1-year Lagging Army Recruiting Totals)

As with model 2, this model is reflective of a very good overall model fit (R^2=.875) that accounts for 87.5% of the variability in the outcome variable (1-year Lagging Army Recruiting Totals) through analysis of the main predictor variables.

Main Predictor Variable: DJIA. Similar outcome to Model 2. The regression analysis for the DJIA shows an incongruent, significant (t-test score = 2.65) positive relationship with Army Recruiting Totals. In this case, the significance of this relationship is weaker than in model 1 and thus confirms the invalidity of a relationship between the DJIA and S&P 500. Discussion section addresses how this finding fits well within the theoretical and historical research findings on the contemporary DJIA as an indicator of economic health.

Main Predictor Variable: S&P 500. Model 3 shows an inverse relationship between the S&P 500 and 1-year Lagging Army Recruiting Totals. This relationship is not statistically significant, but is aligned with findings for the S&P 500 in model 1 and 2.

Main Predictor Variable: Unemployment Rate. Model 3 data analysis shows no significant relationship between the annual Unemployment Rate and Annual Army Recruiting Totals. This is consistent with findings from model 1 and 2.

Main Predictor Variable: GDP. Model 3 data analysis shows a significant inverse relationship between annual GDP and annual Army Recruiting totals (t-test statistic = -9.31). This relationship is consistent with findings in model 1 and 2.

7. Discussion

Overall, the results for this study represent an initial assessment that should lead to more in-depth analysis in order to gain a better understanding of the relationship between U.S. economic conditions and Army recruiting success. The purpose of this section is to evaluate the validity of results for each of the primary predictor variables, assess the relevance of the primary outcome variable, and make recommendations for future related-research analysis.

GDP represents the most illuminating – and directly related – predictor variable when evaluated in relation to annual Army Recruiting Totals. This finding is suggestive of the concept that a lower GDP is indicative of fewer private-sector job opportunities and thus leads job-seekers of all ages to more strongly consider entry into the United States Army. The strength of the relationship between GDP and Army Recruiting Totals also

may be reflective of the theory that recruiting success is more driven by external, indirect factors than by Army-internal actions. This theory is bolstered by the weak, statistically insignificant relationship between Army [discretionary] spending and Army Recruiting Totals.

As with GDP, The S&P 500 regression results aligned well with the general theory that the strength of publicly held companies – the primary source of private industry employment, particularly for blue collar jobs (of which most initial military enlistees would be eligible) – is linked inversely to trends in Army Recruitment Total outcomes. In this way, the broad S&P 500 indicator provides important feedback to researchers in that it validates the premise that this index is the best representation of company value (and associated hiring or expansion capabilities) within the context of modern-day U.S. economics and financial reporting analysis. Nevertheless, the results for the S&P 500 were indicative of only a moderate relationship with Army recruiting; S&P regression results were not statistically significant for the lagging Army Recruitment Total relationship indicator, perhaps the most accurate regression variable within the study for projecting how individual (job-seeker) decisions follow market-driven outcomes or reports. In addition, the relative weakness of key descriptive statistic outcomes, to include R^2 (.53) suggested that further relationship analysis would be required to determine the impact of spurious and non-spurious factors.

The DJIA regression analysis produced inconclusive, mixed results. The analyses for this predictor variable resulted in no identifiable or statistically significant trends in relation to Army Recruiting. This outcome is consistent with modern economic theory in that many consider the DJIA to be a weak, limited indicator of market health. In this way, it is

generally accepted that the DJIA would not be as relevant as the S&P 500 to provide insight into the complex, diverse nature of modern-day economic forces and company health.

Similarly, the outcome for the Nikkei regression analysis reinforced the value of the S&P 500-Army Recruiting relationship by showing how a foreign market index is completely unrelated to Army Recruiting Totals. In the future, however, previously unassociated foreign market index relationship factors may align more closely with that of the S&P 500 (and other U.S. economic indicators) as worldwide market economies become increasingly linked through technology and globalization.

Limitations and Future Research Implications

Future research on the relationship between U.S. economic conditions and Army recruiting outcomes should include several key elements. First, it is critical that researchers refine outcome variable criteria in determining the best alternative for representing Army recruiting effectiveness and the associated metrics for a successful recruiting year. The range of factors that impact Army recruiting outcomes is inherently diverse and, at times, potentially driven by immeasurable factors.

That is, Army recruiting outcomes are traditionally closely linked to a recruiting goal set by the Army and Department of Defense. The annual recruiting goal can be influenced by a broad spectrum of determinants, to include recent recruiting trends, political leadership trends, mission needs of the Army, improvements or changes in Army marketing, adjustments to Army acceptance standards, and demographic shifts in the national population. Each of these possibilities implies that Army recruiting totals are not a linear, direct indicator of recruiting success. Future research may consider the percent-

above Army recruiting mission [goal], regionally-segmented recruiting analysis, Navy or Air Force recruiting trends, additional economic health analysis, and survey-questionnaire analysis of new Army recruits.

To this end, another factor for future research consideration includes the wide-spectrum of individual motivation for entering Army service. Environmental, cultural, and world-event shifts may change how individuals perceive work and the Army career options. Patriotism, U.S. political policies, altruism, and other perceived factors for entry into the U.S. Army should be assessed to determine how they might relate to Army recruiting success changes over time.

8. Conclusion

Ultimately, the findings herein provide a critical insight into the function of economic health analysis for projecting Army recruiting success and trends. Aforementioned economic health factors remain a central point of evaluation for the assessment and development of systematic approaches to shaping our Army for the 21st century. Looking forward, increased awareness of the relationship between Army enlistee recruitment and economic influences in personal decision-making could serve to improve the quality of Army recruit selection and directly impact the strength of the wide-scale Army force structure.

The results of this study suggest a range of external economic and environmental factors have a significant impact on Army recruiting effectiveness. Most notably, the relationship between GDP and Army Recruiting Totals is an important study outcome

which should continue to be evaluated and considered as part of the expansive array of Army recruitment success determinants. Findings for stock indices, to include the S&P 500, are mixed and should not be generalized beyond the scope of this study without further assessment. Future research should focus on multiple outcome variable selections, additional economic health indicators, and social-individual survey techniques.

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