

# 2

## TRENDS IN NUCLEAR SECURITY ASSESSMENTS

THE LAST DECADE of the twentieth century was one of enormous change in the security of the United States and the world. The torrent of changes in Eastern Europe, culminating in the previously unimaginable collapse of the barriers between the two Germanys, shook long-held beliefs about the very foundations for stability and security. The ensuing disintegration of the Soviet Union forced a complete reassessment of national and international security policies amid the most sweeping strategic changes since World War II. The euphoria over the end of the Cold War was tempered, however, as new challenges and uncertainties loomed concerning nuclear proliferation and terrorism. These developments present opportunities and risks that are difficult for scholars, experts, and policymakers to assess, and they are no less challenging for publics the world over. In this chapter, we assess how the American people are adjusting to the momentous security developments of the early post-Cold War era. We analyze trends in public views of how the international security environment is evolving to include assessments of strategic threats posed by Russian and Chinese nuclear weapons capabilities. We illustrate how public views of broader external nuclear risks such as the likelihood of nuclear conflict, nuclear proliferation, and nuclear terrorism evolved between 1993 and 2003. Also we examine trends in beliefs about the risks associated with our own nuclear arsenal. We chart similar comparisons over time of public beliefs about the external and domestic benefits associated with US nuclear weapons.<sup>1</sup>

## Trends in Perceptions of the Security Environment

Beginning in 1997, we employed the following questions to ask survey participants to rate how international security and US security have changed since the end of the Cold War.

*(Lead-in)* I want to ask you some questions about how you think the world may have changed since the end of the Cold War. We are interested in your perceptions. There are no right or wrong answers.

**(Q4)** Considering the international environment as a whole, and using a scale from one to seven where one means the world is much less secure, and seven means the world is much more secure, how do you think international security has changed since the end of the Cold War?

**(Q5)** Focusing more specifically on the US, and using the same scale from one to seven where one means much less secure, and seven means much more secure, how has US security changed since the end of the Cold War?

We compare grouped responses to each question for each of the four measurement periods in figures 2.1 and 2.2.<sup>2</sup>

When we began this series of questions in 1997, a majority of respondents considered international and US security to have improved since the end of the Cold War. This was consistent with much of the considered opinion of the time in which discussion of a “peace dividend” occupied considerable space in the pages of scholarly and policy opinion as well as popular media.<sup>3</sup> The proportion of respondents perceiving security to have improved declined by about 10 percent between 1997 and 2003, while the proportion of those who consider international and US security to have worsened increased by about the same amount. Changes in means for each question from 1997 to 2003 are statistically significant. While it seems likely the terrorist attacks of 9/11

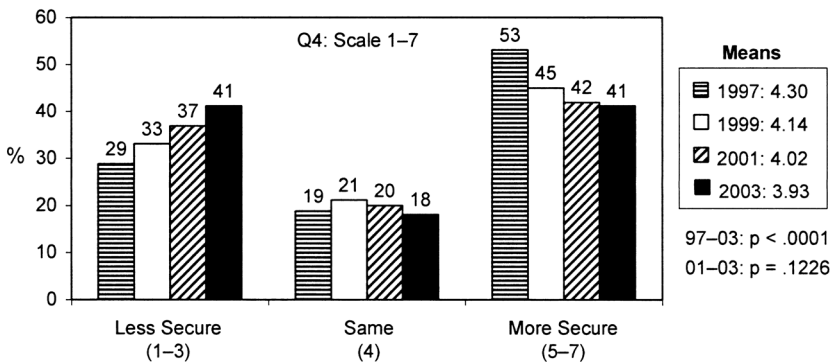


Figure 2.1. How international security has changed since the Cold War

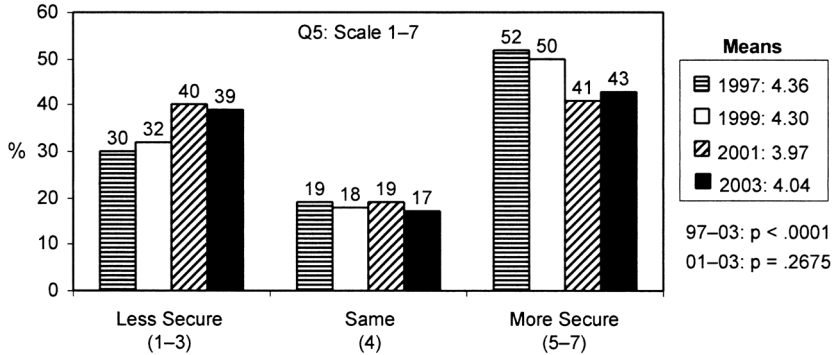


Figure 2.2. How US security has changed since the Cold War

influenced subsequent assessments, our measurements in 1999 suggest that the downward trend has earlier beginnings. In 2003 most respondents do not consider national or international security to have substantially improved over that which existed during the Cold War.

To focus on public understanding of more specific components of strategic security, we also asked the following four questions about current and prospective threats to the United States posed by Russian and Chinese nuclear forces.

*(Lead-in)* Now we want your overall assessment of current and future threats to the US from two sources.

**(Q51)** First, on a scale from zero to ten where zero means no threat, and ten means extreme threat, how would you rate the current threat to the US posed by Russia's nuclear weapons?

**(Q52)** Next, using the same scale from zero to ten where zero means no threat, and ten means extreme threat, how would you rate the current threat to the US from China's nuclear weapons?

**(Q53)** Turning now to your outlook for the future, and using the same scale from zero to ten, how would you rate the threat to the US in the next ten years from Russia's nuclear weapons?

**(Q54)** On the same scale from zero to ten, how would you rate the threat to the US in the next ten years from China's nuclear weapons?

We compare trends in grouped assessments of current threats from Russian and Chinese nuclear forces in figures 2.3 and 2.4, and we compare trends in ratings of future strategic nuclear threats in figures 2.5 and 2.6.

Several points are apparent. First, the mean public rating of the current nuclear threat from Russia is significantly lower in 2001 and 2003 than in earlier surveys in 1997 and 1999, while the corresponding mean rating of the cur-

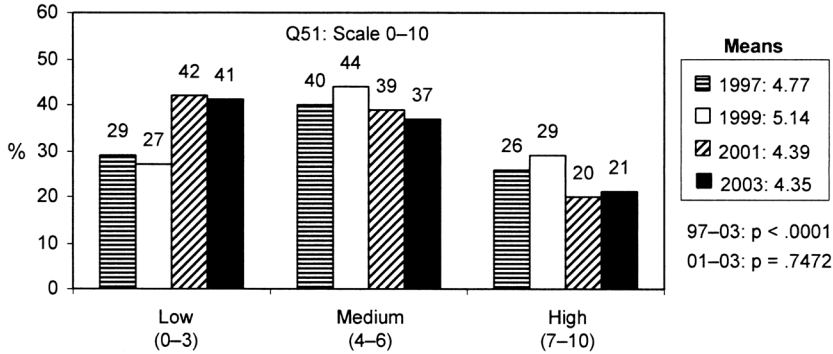


Figure 2.3. Trends in public assessments of the current Russian nuclear threat

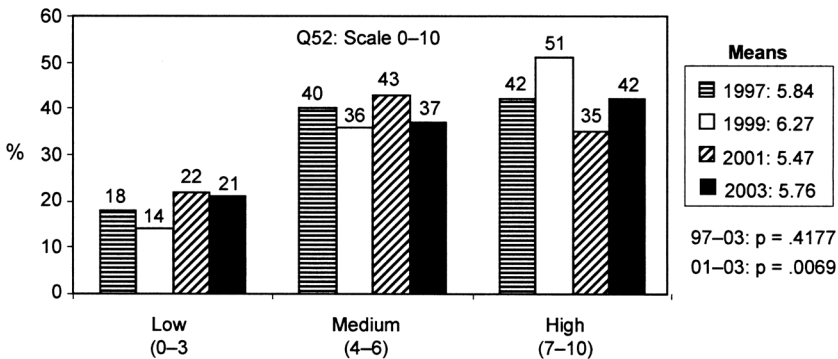


Figure 2.4. Trends in public assessments of the current Chinese nuclear threat

rent threat posed by China's nuclear weapons increases significantly between 2001 and 2003 to a value that statistically is unchanged from 1997. Second, the proportion of respondents in 2003 (42 percent) who rate the Chinese nuclear threat in the high range (7-10) is twice the proportion of respondents (21 percent) who rate the nuclear threat from Russia in the same range. Also note that in each measurement period, the mean nuclear threat rating for China is significantly higher than the corresponding rating for Russia ( $p < .0001$  for each of the four years). Thus while our respondents consider general levels of security to be deteriorating, they also judge the more specific and traditional threats posed by Russian nuclear forces to be decreasing. This speaks to public abilities to absorb major strategic changes in nuclear relationships within the larger context of the evolving post-Cold War security environment.

Figures 2.5 and 2.6 show comparable public assessments of future Russian and Chinese nuclear threats projected over the next ten years.

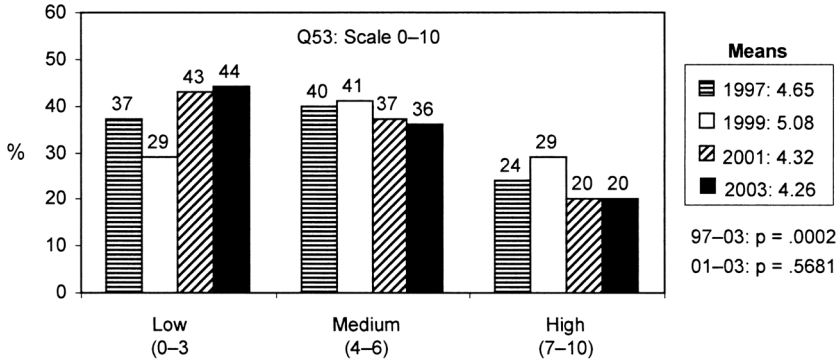


Figure 2.5. Trends in public assessments of the future Russian nuclear threat

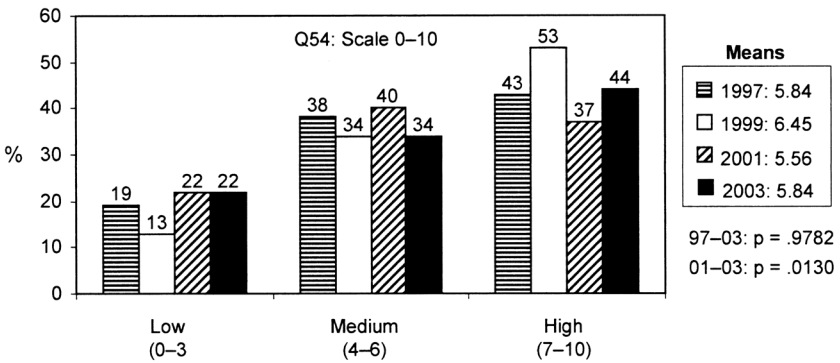


Figure 2.6. Trends in public assessments of the future Chinese nuclear threat

Note that the mean future nuclear threat rating for Russia in 2003 changes little from the previous measurement in 2001, but the mean future threat rating for China rises significantly above that measured two years earlier. Again, the mean ratings of future threats are significantly higher for China than for Russia in each of our four surveys ( $p < .0001$  each year). While the public expects the threat posed by Russia’s nuclear capabilities to remain at about the same level over the next decade, they predict that the Chinese nuclear threat will grow slightly over the same period.<sup>4</sup>

These findings suggest that China has replaced Russia in terms of public expectations of relative current and predicted nuclear threats to US security, and that publicly perceived nuclear threats from each are trending differently. Both current and projected mean nuclear threats from Russia decline significantly over the course of our measurements from 1997 to 2003. Mean current and projected nuclear threats from China vary across the different measure-

ment periods, but by 2003 they are at levels that are statistically unchanged from our first measurements in 1997.

### Trends in External Nuclear Risks

In each survey since beginning this project eighteen months after the breakup of the Soviet Union, we asked a series of six questions designed to measure three dimensions of evolving beliefs about external nuclear risks (risks from others' nuclear weapons). They consist of the following two questions about the risks of nuclear conflict, two questions about the risks of nuclear proliferation, and two questions about the risks of nuclear terrorism.

(Q6) How has the breakup of the Soviet Union affected the chances that the US will be involved in a war with any country in which nuclear weapons are used?

(Q7) How has the breakup of the Soviet Union affected the possibility that nuclear weapons will be used by any country against any other country?

(Q15) How do you think the breakup of the Soviet Union has affected the likelihood that nuclear weapons will spread to other countries?

(Q16) How would you rate the risk to the US if more countries have nuclear weapons?

(Q17) How would you rate today's threat of nuclear terrorism occurring anywhere in the world?

(Q18) How would you rate the threat of nuclear weapons being used by terrorists anywhere in the world during the next ten years?

Table 2.1 compares trends in mean response values for each of the six questions between 1993 and 2003.

Public assessments of the implications of the Soviet breakup remain remarkably steady over the decade. Respondents are divided about the effects on the likelihood of nuclear conflict, with judgments of the chances the United States will become involved in a nuclear conflict increasing modestly (but statistically significantly) over the period, and assessments of the likelihood that nuclear weapons will be used in nuclear conflict between any two countries holding steady at just above midscale. Opinion is equally steady, and less divided, about the effects of the Soviet demise on further nuclear proliferation, with most participants in each survey judging the risks to be higher. Similarly, most respondents consider the risks to the United States, specifically, of further nuclear proliferation to be higher after the Soviet breakup, and that perspective holds steady throughout the measurement period. As to the current and future threat of nuclear terrorism, participants consider the contemporary threat to be increasing, and forecast no reduction when asked

Table 2.1. Trends in mean public assessments of external nuclear risks

Mean external nuclear risks	1993	1995	1997	1999	2001	2003	'93 v '03 p-value
Effect of Soviet breakup on chances US will be involved in nuclear war (Q6: 1 = decreased greatly ↔ 7 = increased greatly)	3.85	4.08	4.04	4.35	4.28	4.14	<.0001
Effect of Soviet breakup on chances nuclear weapons will be used by any country against any other country (Q7: 1 = decreased greatly ↔ 7 = increased greatly)	4.54	4.67	4.41	4.66	4.61	4.50	.5951
Effect of Soviet breakup on further nuclear proliferation (Q15: 0 = greatly reduced ↔ 10 = greatly increased)	6.49	6.02	6.04	6.62	6.10	6.34	.1560
Risk to the US if more countries have nuclear weapons (Q16: 0 = no risk ↔ 10 = extreme risk)	7.65	7.81	7.45	7.65	7.59	7.67	.7413
Threat of nuclear terrorism occurring anywhere in the world today (Q17: 0 = no threat ↔ 10 = extreme threat)	6.89	7.16	7.04	7.14	7.01	7.10	.0237
Threat of nuclear terrorism occurring anywhere in the world in the next 10 years (Q18: 0 = no threat ↔ 10 = extreme threat)	7.00	7.23	6.83	7.09	7.06	7.11	.2432

to consider the next ten years. Clearly, our respondents do not consider the risks of nuclear conflict, nuclear proliferation, or nuclear terrorism to have abated after the Cold War, and judgments about those risks do not show large variations over time.

We combine responses to these six questions to form a composite index of external nuclear risks that provides a robust indication, comparable over time, illustrating trends in evolving beliefs about external nuclear weapons risks.<sup>5</sup> In figure 2.7 we show the distribution of responses in 2003, and in figure 2.8 we chart trends in mean external nuclear risk indices between 1993 and 2003.<sup>6</sup> In 2003, about 8 percent of respondents judge external nuclear risks to be low (0–3), 49 percent rate them moderate (4–6), and 42 percent place them in the high range (7–10). The modal value is 6.0, and the mean is 6.52.

Mean composite external nuclear risks remain notably steady over the course of the decade, even after the events of 9/11. Thus it appears that the general public differentiates between the nonnuclear risks deriving from the terrorist attacks of 9/11 versus the risks posed by others' nuclear weapons—including nuclear terrorism—and do not conclude that overall external *nuclear* risks have changed appreciably. As our findings show, from the perspectives of the US general public, average composite external nuclear risks vary only

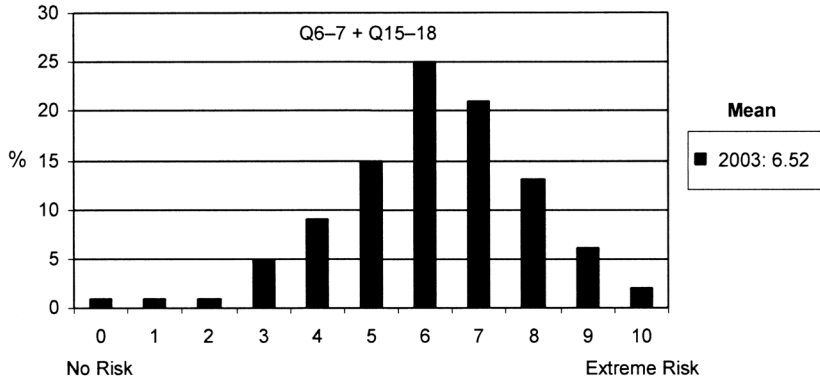


Figure 2.7. External nuclear risk index, 2003

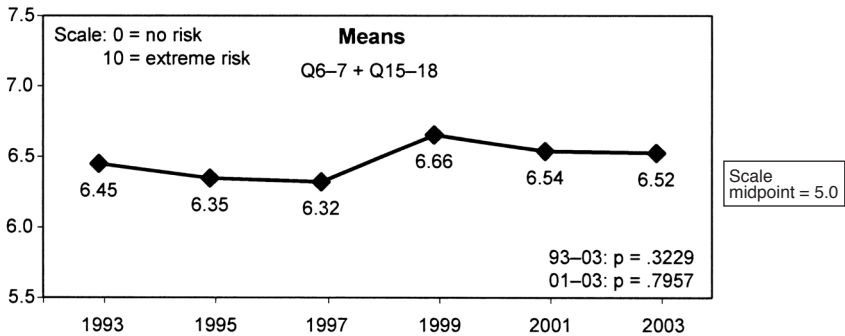


Figure 2.8. Trends in the mean external nuclear risk index, 1993–2003 (Note that here and in subsequent trend graphs, we truncate the vertical scale to better illustrate the data. We identify the scale midpoint to help orientation.)

0.34 on a scale from zero to ten over the decade from 1993 to 2003. But we note also that mean assessments are well above the scale midpoint of 5.0 in each measurement period, and that a substantial decrease in overall nuclear risks following the end of Cold War hostilities between the United States and the Soviet Union has yet to occur in the judgments of our respondents.

### Trends in Domestic Nuclear Risks

In addition to measuring public assessments of risks deriving from others' nuclear weapons, we also measure domestic risks believed to derive from our own nuclear weapons. In each measurement period since 1993, we asked respondents from the general public to rate the domestic risks associated with



manufacturing, transporting, storing, disassembling, and storing materials from disassembled US nuclear weapons. Additionally, we asked them to rate the likelihood that a US nuclear weapon might be employed without proper national authorization, and the likelihood that an accidental nuclear explosion might occur. The following questions allow us to compare trends in public beliefs about domestic nuclear risks.

*(Lead-in)* The next several questions ask for your perceptions about risks to American society associated with managing US nuclear weapons. Using a scale from zero to ten where zero means no risk, and ten means extreme risk, how would you rate the risk of each of the following items?

(Q8) Manufacturing nuclear weapons in the US

(Q9) Transporting nuclear weapons in the US

(Q10) Storing existing nuclear weapons in the US

(Q11) Disassembling nuclear weapons in the US

(Q12) Storing radioactive materials in the US from disassembled weapons

(Q13) On a scale from zero to ten, where zero means not at all likely, and ten means highly likely, how would you rate the likelihood of a US nuclear weapon being used within the next twenty-five years without presidential authorization?

(Q14) On the same scale from zero to ten, how would you rate the likelihood of an accident involving a US nuclear weapon causing an unintended nuclear explosion?

In table 2.2, we show mean responses to each question across the six surveys.

Note that in contrast to the previously charted steady or increasing public assessments of external nuclear risks, views of domestic nuclear risks deriving from US nuclear weapons capabilities show significant decreases in each category measured over the past decade. The reductions in mean perceived risks from the US nuclear arsenal range from a 14 percent decline in the likelihood of unauthorized use of a US nuclear weapon to a decrease of 23 percent in risks associated with manufacturing components for US nuclear weapons. These observations are recorded during a decade in which the United States is not developing, manufacturing, or testing nuclear weapons, though, presumably, some critical components are remanufactured. Of course, storage and transportation activities are ongoing, and nuclear weapons are being disassembled.

By combining responses to these questions we create a robust index of public beliefs about domestic risks associated with US nuclear weapons, as shown in figure 2.9.<sup>7</sup> By comparing composite mean assessments of the domestic nuclear risk index over time, we illustrate trends in figure 2.10. Grouped responses in 2003 indicate that 34 percent consider domestic nuclear risks to

Table 2.2. Trends in mean public assessments of domestic nuclear risks

Domestic risk measures	1993	1995	1997	1999	2001	2003	'93 v '03 p-value
Manufacturing nuclear weapons in the US (Q8: 0 = no risk↔10 = extreme risk)	6.54	5.74	5.10	5.42	5.07	5.06	< .0001
Transporting nuclear weapons in the US (Q9: 0 = no risk↔10 = extreme risk)	6.84	5.96	5.42	5.68	5.44	5.49	< .0001
Storing existing nuclear weapons in the US (Q10: 0 = no risk↔10 = extreme risk)	6.57	6.07	5.71	5.94	5.46	5.60	< .0001
Disassembling nuclear weapons in the US (Q11: 0 = no risk↔10 = extreme risk)	6.02	5.51	5.06	5.34	4.95	4.94	< .0001
Storing radioactive materials in the US from disassembled weapons (Q12: 0 = no risk↔10 = extreme risk)	7.64	6.25	6.12	6.39	5.86	5.92	< .0001
Likelihood of unauthorized use of US nuclear weapon in next 25 years (Q13: 0 = not at all likely↔10 = extremely likely)	4.06	4.34	3.91	4.24	3.08	3.50	< .0001
Likelihood of an unintended US nuclear weapon explosion (Q14: 0 = not at all likely↔10 = extremely likely)	4.79	4.98	4.57	4.70	3.78	4.09	< .0001

be low (0–3), 47 percent rate them moderate (4–6), and 18 percent judge them to be relatively high (7–10). The modal response is 5.0, and the mean is 4.93.

The downward trend in composite means from 6.06 in 1993 to 4.93 in 2003 clearly is statistically significant. The mean value for combined domestic nuclear risks fell below midscale both in 2001 and 2003, suggesting declining levels of public concern about safeguarding and controlling nuclear weapons. As will be shown in chapter 3, responses to direct questions about trust in

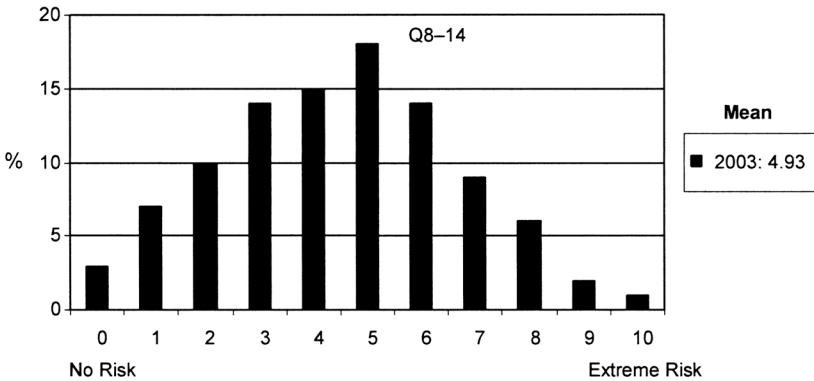


Figure 2.9. Domestic nuclear risk index, 2003

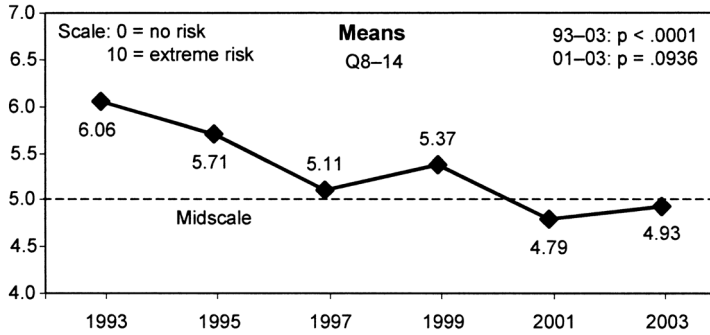


Figure 2.10. Trends in the mean domestic nuclear risk index, 1993–2003

the Departments of Energy and Defense, as well as US national laboratories, reflect substantial levels of public confidence in the US nuclear weapons establishment.

### Trends in External Nuclear Benefits

To measure public assessments of external benefits believed to derive from the US nuclear arsenal, we posed questions about the importance of nuclear weapons for US influence and status, remaining a military superpower, preserving the American way of life, and providing nuclear deterrence. The questions are shown below in summary fashion.

(Q19) How important are US nuclear weapons for US influence over international events?

(Q20) How important are US nuclear weapons for maintaining US status as a world leader?

(Q21) How important is it for the US to remain a military superpower?

(Q22) How important have nuclear weapons been to preserving America's way of life?

(Lead-in) The next three questions ask about your perceptions of nuclear deterrence, which means preventing someone from using nuclear weapons against us, because they expect that we would retaliate by using nuclear weapons against them.<sup>8</sup>

(Q23) First, how important was nuclear deterrence in preventing nuclear conflict during the Cold War?

(Q24) How important are US nuclear weapons for preventing other countries from using nuclear weapons against us today?

(Q25) If more countries acquire nuclear weapons in the future, how effective will nuclear deterrence be in preventing nuclear wars from occurring anywhere in the world?

We compare mean responses to each question over time in table 2.3.

Mean assessments of the importance of US nuclear weapons for international influence and US status as a world leader, and the importance of remaining a military superpower increase significantly between our first survey in 1993 and our survey in 2003. Mean judgments of the importance of nuclear deterrence for preventing nuclear conflict during the Cold War and today are all high, and they remain steady throughout the measurement period. Finally, even when asked to assume that additional countries successfully acquire nuclear weapons, the future effectiveness of nuclear deterrence in a more proliferated world is rated above midscale and varies little over the six surveys. This continued strength of valuations of US nuclear weapons ca-

**Table 2.3.** Trends in mean public assessments of external nuclear benefits

<i>Mean external nuclear benefits</i>	1993	1995	1997	1999	2001	2003	<i>p-value</i>
Importance of nuclear weapons for US international influence (Q19: 0 = not at all important ↔ 10 = extremely important)	6.10	6.39	6.32	6.70	6.84	6.74	'93 v '03 < .0001
Importance of nuclear weapons for US status as a world leader (Q20: 0 = not at all important ↔ 10 = extremely important)	6.25	6.67	6.59	7.06	7.16	7.12	'93 v '03 < .0001
Importance of US remaining a military superpower (Q21: 0 = not at all important ↔ 10 = extremely important)	7.62	8.00	8.18	8.46	8.76	8.32	'93 v '03 < .0001
Importance of nuclear weapons for preserving US way of life (Q22: 0 = not at all important ↔ 10 = extremely important)	6.07	6.30	6.28	6.47	6.57	6.22	'93 v '03 .1904
Importance of nuclear deterrence during Cold War (Q23: 0 = not at all important ↔ 10 = extremely important)	NA	7.79	7.63	7.66	7.88	8.02	'95 v '03 .0023
Importance of nuclear deterrence today (Q24: 0 = not at all important ↔ 10 = extremely important)	NA	7.60	7.41	7.66	7.62	7.47	'95 v '03 .1458
Future effectiveness of nuclear deterrence if more countries acquire nuclear weapons (Q25: 0 = not at all effective ↔ 10 = extremely effective)	NA	5.99	6.00	5.92	6.99	5.85	'95 v '03 .1741

pabilities more than a decade after the end of the Cold War is surprising. We anticipated a decline in public views of the importance of US nuclear weapons in the post-Cold War era.

We combine responses to these questions to form an external nuclear benefit index for which the distribution of responses in 2003 is shown in figure 2.11, and the means are charted over time in figure 2.12.<sup>9</sup> This distribution pattern clearly shows that respondents in 2003 attribute substantial external security benefits to the US nuclear arsenal. About 58 percent of respondents rate the combined external benefits of nuclear weapons in the high range (7–10), while only about 7 percent of respondents place them in the low range (0–3). About 35 percent rate external nuclear benefits in the middle range (4–6). The modal response is 7.0, and even the mean is in the high range at 7.11.

The trend in our composite index of mean external nuclear benefits since 1995 generally is upward, with a turn downward in 2003. Note, however, that mean assessments are well above midscale in each period. A dozen years af-

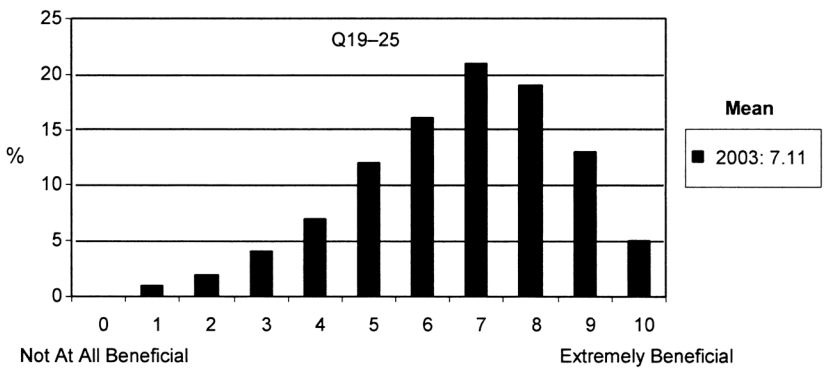


Figure 2.11. External nuclear benefit index, 2003

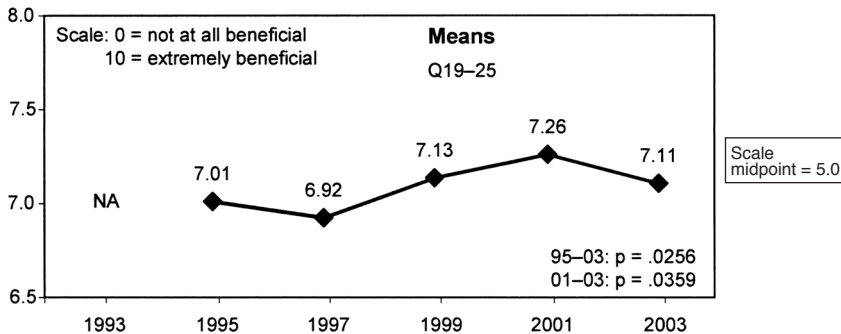


Figure 2.12. Trends in the mean external nuclear benefit index, 1995–2003

ter the end of the Cold War, mean public views of the benefits of US nuclear weapons for achieving national objectives have not declined from those values recorded shortly after the collapse of the Soviet Union, and have actually increased somewhat. Clearly, the devaluation of US nuclear weapons we expected in the post-Cold War period has not yet occurred.

### Trends in Domestic Nuclear Benefits

Public assessments of domestic benefits related to US nuclear weapons are more difficult to gauge than the other three dimensions of nuclear risks and benefits. Measuring domestic benefits requires differentiating nuclear investments from those that are nonnuclear, and that is problematic. For example, some US weapon systems are designed to employ both nuclear and nonnuclear munitions. In some cases, weapon systems such as aircraft or naval vessels are designed for and employed primarily in conventional, nonnuclear roles, but also have the capacity to be used for employing nuclear weapons. Other systems, such as the B-1 bomber, may originally be designed primarily for nuclear roles but later are adapted to conventional missions. Also, expenditures for personnel and support equipment and facilities are not easily separated into nuclear and conventional components, because many of the same skills and equipment are applicable to both nuclear and nonnuclear combat environments.

The same is true for investments in research and development that can encompass both conventional and nuclear systems as well as dual-role systems. Other types of investments, such as those for strategic intelligence and command and control are even harder to differentiate, because they are not publicly reported with sufficient clarity to definitively categorize them as to their nuclear vs. conventional applicability. Some of the investment categories that may be applicable to nuclear systems and capabilities are made outside the defense budget, and tracking all nuclear-related investment categories across the entire federal budget is extremely complex. These and other factors make the separation of nuclear and nonnuclear expenditures and investments very difficult, and thus measuring the domestic benefits of the nuclear categories is a daunting task for technical experts, and is even more problematic for most citizens.<sup>10</sup>

For these and other reasons, we limit our questions to three broad inquiries into public beliefs about potential domestic benefits associated with nuclear weapons. As shown below, the three questions address cost trade-offs in nuclear and nonnuclear military capabilities, the economic value of jobs related to defense industries, and the potential benefit of technology transfers from the defense sector to other sectors of the US economy.

(Q37) Using a scale from one to seven where one means you strongly disagree, and seven means you strongly agree, please respond to the following statement. “Having a nuclear arsenal means the US can spend less for national defense than would be necessary without nuclear weapons.”

(Lead-in) The next two questions deal with the economic value of defense industry jobs and defense-related technologies. Both use a scale from one to seven where one means little economic value, and seven means great economic value.

(Q38) First, how do you rate the economic value of defense industry jobs in America?

(Q39) Next, how do you rate the economic value of technological advances in defense industries for other areas of the US economy?<sup>21</sup>

We compare trends in mean responses to each question in table 2.4.

Even in an environment in which the numbers of US nuclear weapons are being reduced, perceived domestic benefits of US nuclear capabilities are not declining; in fact, mean responses to each question have increased significantly since we first asked them. For comparative purposes, we combine responses to each question to form a domestic nuclear benefit index, and we chart the distribution of the index for 2003 in figure 2.13.<sup>12</sup>

Responses are grouped mostly toward the middle and upper portions of the scale, with 40 percent of respondents placing domestic nuclear benefits in the high range (7–10) and 46 percent rating them in the midrange (4–6). About 14 percent of respondents judge them to be low (0–3). The pattern shows a modal response value of 6.0 and a mean of 6.55, which, as shown in figure 2.14, has remained remarkably stable since 1995.

This pattern of means shows a sustained level of valuation from 1995 (the first year in which all three questions were asked) to 2003 that is well above midscale. The previously discussed difficulties in judging domestic nuclear benefits do not prevent consistent evaluations, and the fact that they are not grouped around midscale suggests that most respondents are able to form

Table 2.4. Trends in mean public assessments of domestic nuclear benefits

Mean domestic nuclear benefits	1993	1995	1997	1999	2001	2003	p-value
US nuclear arsenal means we can spend less than would be necessary without nuclear weapons (Q37: 1 = strongly disagree ↔ 7 = strongly agree)	3.43	3.94	4.15	4.02	3.69	3.87	'93 v '03 < .0001
Economic value of defense industry jobs (Q38: 1 = little value ↔ 7 = great value)	4.55	4.88	5.13	5.22	5.50	5.26	'93 v '03 < .0001
Economic value of technological advances in defense industries for other areas of US economy (Q39: 1 = little value ↔ 7 = great value)	NA	5.29	5.60	5.69	5.82	5.67	'95 v '03 < .0001

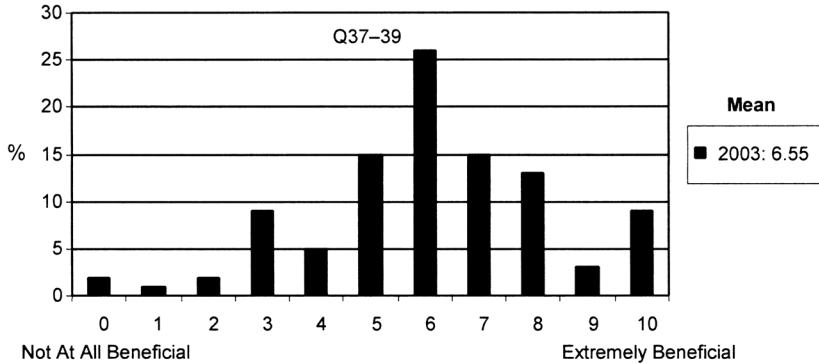


Figure 2.13. Domestic nuclear benefit index, 2003

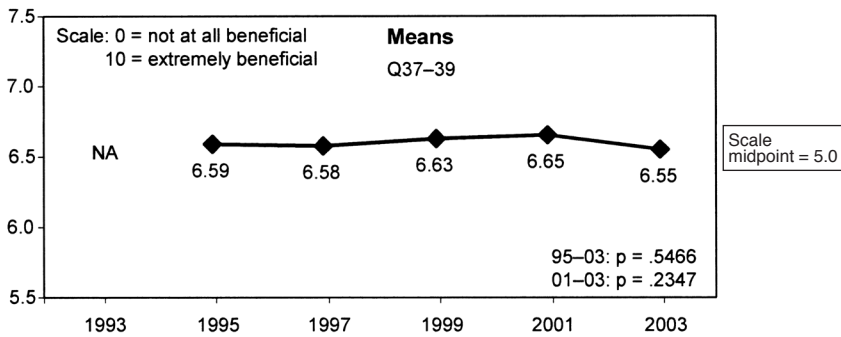


Figure 2.14. Trends in the mean domestic nuclear benefit index, 1995-2003

opinions about the benefits of defense investments for the US domestic economy.

We employ these four indices of public beliefs about external and domestic nuclear risks and benefits as important measures of domain beliefs when we analyze mass belief structures in chapter 6. But next we examine trends in public views about specific nuclear security issues, such as the contemporary relevance of nuclear weapons, the efficacy of nuclear deterrence, nuclear security policy and spending preferences, and trust in key elements of the US nuclear weapons establishment.