

## **The National Origins of Foreign Fighters in Iraq**

Alan B. Krueger  
Princeton University and NBER

First Draft: July 23, 2006  
This Draft: December 30, 2006

\*I thank Avinash Kishore and Clara Anderson for essential research assistance and David Laitin, Jesse Shapiro and seminar participants at the NBER National Security Summer Institute 2006 for helpful comments.

From President Bush on down to military press officers in Iraq, the U.S. government has singled out foreign fighters as a serious obstacle to establishing stability and the rule of law in Iraq. While small in number compared with domestic insurgents, foreigners have been blamed for some of the worst acts of violence in the three years since the Iraq invasion.<sup>1</sup> For example, Major General Rick Lynch, a spokesman for the Multi-National Force in Iraq, said, “We believe that a major piece -- not numerically but in terms of the effects of their attacks -- of the insurgency is terrorists and foreign fighters.” And President Bush stated, “Some of the violence you see in Iraq is being carried out by ruthless killers who are converging on Iraq to fight the advance of peace and freedom. Our military reports that we have killed or captured hundreds of foreign fighters in Iraq who have come from Saudi Arabia and Syria, Iran, Egypt, Sudan, Yemen, Libya and others.”<sup>2</sup> Although reports have rightly questioned whether U.S. officials have exaggerated the role of foreign fighters (e.g., Ricks, 2006), understanding the factors that lead foreigners to join terrorist and insurgent movements around the world is an important research topic.

Foreign fighters, for example, played a significant role opposing the Soviet occupation of Afghanistan in the 1980s and in the Bosnian conflict in the 1990s. Indeed, many of the leaders and most notorious members of the jihadist movement today were drawn from these causes, including Osama Bin Laden.

This paper provides the first attempt to statistically model the origins of foreign fighters in Iraq. Specifically, the paper presents results of Negative Binomial regression

---

<sup>1</sup> According to Department of State (2006), “Foreign fighters are believed to number about four to ten percent of the estimated 20,000 or more insurgents” in Iraq.

<sup>2</sup> Transcript, President Addresses Nation, Fort Bragg, North Carolina, June 28, 2005, available from [www.whitehouse.gov/news/releases/2005/06/20050628-7.html](http://www.whitehouse.gov/news/releases/2005/06/20050628-7.html).

models estimated at the country level in which the dependent variable is the number of foreign fighters originating from various countries who were captured in Iraq according to the Multi-National Force-Iraq. The main findings are that countries with a large Muslim population, close proximity to Baghdad, low level of civil liberties or political rights, and low infant mortality rate are likely to have more of their citizens join the Iraqi insurgency. A country's literacy rate, GDP per capita and membership in the multinational coalition are unrelated to the number of foreign fighters captured in Iraq. Although the model accurately predicts the number of captured insurgents for most countries, it predicts that a larger number of Saudis and smaller number of Sudanese would have been apprehended than appears to have been the case. Tabulations presented from public opinion polls in four predominantly Muslim countries also support the view that education and income are not consistently related with support for the Iraqi insurgency at the individual level.

## **I. Data**

Accurate and representative data on the nationality of foreign insurgents in Iraq are difficult to come by. This paper analyzes data on the country of origin of 311 foreign nationals who were captured in Iraq from April to October of 2005. The data were disclosed by the U.S. military in a press briefing on October 20, 2005.<sup>3</sup> Unfortunately, little description was provided regarding how the data were collected.<sup>4</sup> Major General Lynch explained the source of the information as follows, "They're identified in terms of

---

<sup>3</sup> A transcript was posted at [www.mnf-iraq.com/Transcripts/051020.htm](http://www.mnf-iraq.com/Transcripts/051020.htm) at the time.

<sup>4</sup> It is likely that the data came from MNF-I & MNC-I reports.

questions we asked them, interrogations we do, papers that they might have on them. But with authority, we can say they came from those countries.”

The data may well contain several errors and omissions. For example, since Syria is a common entry point into Iraq, insurgents from other countries may be misattributed to Syria if they carry Syrian documents. In addition, some Egyptian workers who came to Iraq prior to the invasion for economic reasons may have been rounded up and counted in the data even though they were not involved in the insurgency. And it is entirely possible that foreign insurgents who were killed in action or evaded capture are from a different mix of countries than those who were captured. Despite these flaws, this data set represents the most comprehensive unclassified information on the country of origin of foreign fighters in Iraq currently available.

The 311 captured foreigners came from 27 different countries. The largest number came from Egypt (78), Syria (66), Sudan (41), Saudi Arabia (32), Jordan (17), Iran (13), Palestine (12), and Tunisia (10). Western countries were also represented. Two insurgents came from Great Britain and one came from the U.S., Denmark, Ireland and France. The countries that round out the list are: Algeria (8); Libya (7); Turkey (6); Lebanon (3); Qatar (2); UAE (2); India (2); Macedonia (1); Morocco (1); Somalia (1); Yemen (1); Israel (1); Indonesia (1); and Kuwait (1).

Of course, most countries in the world are not represented among the captured insurgents, and there is information in these observations. Defining a universe of countries for the sample is difficult. I present results for two different samples. The first sample consists of 76 countries in the Middle East, North Africa, Europe and Central

Asia, henceforth called the MENAECA sample.<sup>5</sup> The second sample consists of 47 countries whose capital is located within 3,000 kilometers of Baghdad. (For perspective, this is about the distance from Phoenix to Washington, D.C.)

Data on several explanatory variables, including population, GDP per capita in 2004 PPP dollars, and an index of political and civil liberties, were merged to the data set. The explanatory variables pertain to the characteristics of the origin country. Table 1 summarizes the variables, sources and means and standard deviations for the 76 MENAECA countries.

## **II. Analysis**

Tables 2 presents estimates of Negative Binomial regression models in which the dependent variable is the number of insurgents captured from each country. The Negative Binomial distribution was selected over the Poisson because the data exhibit strong over dispersion. The sample consists of 76 countries in the MENAECA area. Table 3 presents estimates for a sample of 47 countries that lie within 3,000 Km of Baghdad. (The coalition member dummy was dropped from these models because the estimates would not converge when it was included.)

The results for both samples are qualitatively similar. In all of the models, the origin country's population size has a strong positive effect on the number of foreign fighters captured in Iraq, while the distance between the origin country's capital and Baghdad has a strong negative effect on the number of captured individuals. A unit elasticity for population cannot be rejected in any model. The effect of distance is also

---

<sup>5</sup> India, Pakistan, Bangladesh, Bhutan, Nepal, and Sri Lanka were included from Asia, as well as Indonesia. The sample initially contained 81 countries but was reduced to 76 because of missing data on religion and civil liberties; 26 of these countries had captured foreign nationals represented in the data set.

sizable.<sup>6</sup> To gauge how much proximity to Iraq matters, consider the difference between Saudi Arabia and the United Arab Emirates. The difference in the distance between the two countries' capitals and Baghdad is nearly 400 Kilometers, or 0.33 units when distances are measured in natural logarithms. Based on the coefficient in column (1) of Table 3, this gap would be expected to lead to nearly a two-to-one ratio ( $1.95 = \exp(.33*2.021)$ ) in the number of captured insurgents from the respective countries, other things being equal.

The effect of the home country's GDP per capita on the number of captured insurgents is weak and inconsistent across the models. GDP per capita has a negative but insignificant effect in the parsimonious model in column (1), and it turns positive in the model in column (2). In results not shown here, growth in real GDP per capita from 1990 to 2000 was added to the model in column (1) of Table 2.<sup>7</sup> A country's ten-year GDP growth was estimated to have a positive but insignificant effect on the number of captured insurgents from that country. In addition, for 57 countries the Gini coefficient can be included in the models in Table 2. The Gini coefficient has a positive and statistically significant effect in models that exclude the percent of the population that is Muslim, but virtually a zero effect once the percent of the population that is Muslim is included in the model. I also find that U.S. foreign aid has an insignificant and small positive effect if it is added to the model in column (3).

---

<sup>6</sup> The depressing effect of distance is not just standing in for sharing a border with Iraq or for having to cross more national borders to reach Iraq. If these variables are added to the model in column (3) of Table 2, bordering Iraq has an insignificant and small effect while the number of countries between the origin country and Iraq has a positive and statistically significant effect, and distance remains significant.

<sup>7</sup> GDP growth was computed from the Penn World Tables, Version 6.1. Unfortunately, the sample size was substantially reduced by including ten-year GDP growth.

Infant mortality may be a better indicator of living conditions for the lower ranks of the income distribution than GDP per capita in many countries, especially in oil-rich Middle Eastern states. Curiously, a higher infant mortality rate is associated with fewer foreign nationals being captured in Iraq, and this relationship is statistically significant in Tables 2 and 3. The implied effect of the infant mortality rate is also very large: a reduction in infant mortality corresponding to a movement from the 75<sup>th</sup> percentile country to the 25<sup>th</sup> percentile country is associated with more than a 6 fold increase in the number of captured insurgents. Overall, there is no support for the view that poor or deteriorating economic conditions in the origin country lead its people to join the insurgency in Iraq, although the effect of GDP per capita is not very precisely estimated.

Many of the other variables are also of interest. A lower level of civil liberties in the origin country is associated with a greater number of captured insurgents from that country, and this effect is statistically significant in all of the models. The effect of civil liberties is also sizable: the model in column (3) of Table 1 implies that a decrease in civil liberties from that of the 75<sup>th</sup> to the 25<sup>th</sup> percentile country is associated with a 7 fold increase in the number of captured insurgents. An important caveat, however, is that because civil liberties and political rights are so highly correlated ( $r=0.96$ ) in these data it is impossible to distinguish between the two variables with any confidence. The model includes only civil liberties because of the strong multicollinearity, but this variable could be picking up the effect of political rights or other factors associated with political and civil freedoms.

A higher literacy rate has a negative effect on a country's number of captured insurgents, but this effect only achieves statistical significance at the 10 percent level in

the model in column (3) of Table 2. Countries with a higher percentage of their population belonging to the Muslim religion tend to have more people among the captured insurgents, and this effect is statistically significant at the 5 percent level or lower in all of the models. An increase in the share in the population that is Muslim by 50 percentage points is associated with a 170 percent increase in the number of captured insurgents from that country, other things being equal, according to the model in column (3) of Table 2; this figure rises to 370 percent in the model in column (3) of Table 3.

The final variable shown in Table 2 is a dummy indicating whether each country was a member of the multinational coalition in Iraq, defined to equal one if the country contributed troops to the Iraq war effort (for any purpose) at any time since the start of the invasion. Participation in the multinational coalition is not associated with an increased number of captured insurgents. Madrid and London may have been targets for terrorist attacks because of their nations' involvement in the Iraq invasion, but countries that participated in the multinational coalition do not appear to be more likely to have their citizens join the insurgency. In results not shown here, I also found that the number of U.S. military troops stationed in a country had a negative but statistically insignificant effect on the number of foreigners captured in Iraq. This finding is inconsistent with the view that many foreign nationals join the insurgency in response to U.S. military presence in their home country.

For three quarters of the countries in the sample, the model in column (3) of Table 2 predicts the number of captured insurgents by within  $\pm 1$  individual. It is informative to examine the identity of the outliers. Table 4 reports information on the five largest positive and negative prediction errors. Surprisingly, the model *over* predicts the number



of captured insurgents from Saudi Arabia by the largest margin. The next largest negative residual is for Iran. The model predicts a large number of captured insurgents from these countries because they are geographically close to Iraq and have large Muslim populations and a low level of civil liberties. The predicted value for Saudi Arabia is larger than that for Iran because Saudi Arabia has a substantially lower infant mortality rate.<sup>8</sup> The large negative residual for Iran is possibly due to the fact that it has a majority Shiite Muslim population, and the Shiites are less likely to join the insurgency. It is also possible that Iranians operating in Iraq are less likely to be captured because of sympathies of many Shiite-dominated Iraqi police and military units.

The finding for Saudi Arabia is more difficult to explain, and surprising given the amount of attention paid to Saudi insurgents in Iraq by Paz (2005) and others. Kuwait, Pakistan and UAE are also predicted to have more of its citizens among the captured foreign fighters in Iraq than appears to have been the case, perhaps because of their governments' close alliance to the U.S. This factor may also account for the Saudi Arabia's negative prediction error.

Looking in the other direction, the model severely under predicts the number of insurgents captured from Jordan, Egypt, Syria, and Sudan. The high level of participation by Jordanians is possibly explained by the fact that Abu Musab al-Zarqawi, the leader of Al-Qaeda in Iraq until his death on June 7, 2006, was from Jordan and managed to recruit many of his countrymen to his cause. As mentioned previously, the figures for Egypt and Syria may be overstated because of data problems, although it is also possible that more Egyptians and Syrians have enlisted in the Iraqi insurgency than

---

<sup>8</sup> If the model in column 2, which omits infant mortality, is used instead of the one in column 3 to form predictions, Iran is found to have a larger (in magnitude) negative residual than Saudi Arabia. But Iran and Saudi Arabia still have the two largest negative residuals of all the countries in this model.

the number predicted by the model. The higher than predicted representation of Sudanese nationals may result from the fact that Al-Qaeda was previously headquartered in Sudan, as well as from Sudan's long running civil war.

### **III. Related Evidence**

The country-level analyses in Tables 2 and 3 suggest that economic conditions and literacy in the origin country are not strongly associated with the number of foreign nationals who joined the Iraqi insurgency. Available micro-level evidence from public opinion surveys in a handful of predominantly Muslim countries provide complementary evidence that income and education at the individual level are not consistently related to support for the Iraq insurgency. Figure 1 and 2 report results from the 2004 Pew Global Attitudes Survey.<sup>9</sup> Specifically, the figures provide tabulations of responses to the following question, broken down by education and income: "What about suicide bombing carried out against Americans and other Westerners in Iraq? Do you personally believe that this is justifiable or not justifiable?"

In each country, expressed belief that suicide bombings are justifiable tends to rise with educational attainment, although the patterns are not always monotonic. It is also worth noting that a high proportion of people in all educational groups said that suicide bombing is justifiable, especially in Morocco and Jordan. Interestingly, the apparent greater public support for the Iraqi insurgency in Jordan than in Pakistan is consistent with the finding in Table 4 of under prediction of captured Jordanian nationals and over prediction of Pakistanis.

---

<sup>9</sup> I thank Nicole Speulda of the Pew Research Center for providing the tabulations underlying these figures and for answering many questions. The surveys were conducted in February 2004. The samples consisted of about 1,000 individuals each in Morocco (urban), Jordan, Turkey, and Pakistan (mostly urban).

Figure 2 presents tabulations of the Pew public opinion data by income quartile for Turkey and Jordan. (Income is not available for Morocco and is only available in broad ranges for Pakistan.) In Turkey, higher income respondents were more likely to say suicide bombing is justifiable than were lower income respondents, and in Jordan the pattern is reversed. Other research on public opinion generally finds inconsistent or weak relationships between expressed support for terrorism and education and income as well (e.g., Krueger and Maleckova, 2003 and Gentzkow and Shapiro, 2004).

#### **IV. Conclusion**

The results in this paper, though descriptive, suggest that the foreign opposition to the Multi-national forces in Iraq mainly comes from citizens of nearby Muslim countries with repressive regimes. Economic circumstances in the origin country of foreign fighters do not seem to be a particularly important predictor variable. Fewer Iranians and Saudis have been captured in Iraq than would be predicted by the factors in the econometric model, while more Sudanese and Syrians have been captured than predicted. Although it is possible that insurgents from some countries are better at evading capture than those from others, or that national identification of captured insurgents are biased in some ways, it is also possible that omitted factors, such as the share of a country's Muslim population that follows Shi'a Islam or civil strife in the origin country, are important factors that increase the likelihood of a country's citizens joining the insurgency. It would be useful for future work to explore these possible influences.

Another interesting question is why distance has such a large effect on participation in the insurgency, conditional on the other variables in the model. Greater

distance could raise the cost of joining the insurgency, although travel is probably not prohibitively expensive. Another possibility is that geography matters because Iraq's neighbors feel greater allegiance to the cause of the Iraqi insurgents, or feel that they and their families will benefit from their involvement in Iraq because of their proximity.

Lastly, it is worth contrasting the results of this study with related cross-country analyses of terrorism and civil war. On the one hand, Fearon and Laitin (2003) and Collier and Hoeffler (2000) find that the incidence of civil war falls with GDP per capita across countries. On the other hand, Krueger and Maleckova (2003), Abadie (2006), Piazza (2006), and Krueger and Laitin (2003) find that the occurrence of terrorism is mostly unrelated to GDP in the origin country and positively related to GDP in the target country. In addition, a low level of civil and political freedoms has been found to be positively related to terrorism. With these findings in mind, participation of foreign nationals in the Iraqi insurgency appears to reflect the forces that are more closely associated with involvement in international terrorism than those that are associated with the outbreak of civil war. This conclusion is consistent with the widespread belief that the objectives and motives of foreign insurgents in Iraq are different from those of the indigenous insurgents who are waging a civil war by the standard academic definition.

## References

- Abadie, Alberto. (2006). Poverty, Political Freedom, and the Roots of Terrorism. *American Economic Review*. May, 96:2, pp. 50-56.
- Collier, Paul and Anne Hoeffler. (2000). "Greed and Grievance in Civil War," World Bank, Policy Research Working Paper 2355.
- Fearon, James and David D. Laitin. (2003). "Ethnicity, Insurgency, and Civil War," *American Political Science Review* 97, 1 (February 2003), 75-90.
- Gentzkow, Matthew A. and Jesse M. Shapiro. (2004). "Media, Education and Anti-Americanism in the Muslim World," *Journal of Economic Perspectives*, Vol. 18, No. 3, Summer.
- Krueger, Alan B., & Laitin, David D. (2003). Kto Kogo?: A Cross-Country Study of the *Origins and Targets of Terrorism*. <http://www.krueger.princeton.edu/terrorism3.pdf>
- Krueger, Alan B., & Maleckova, Jitka. (2003). Education, Poverty and Terrorism: Is There a Causal Connection? *Journal of Economic Perspectives*, 17(4), 119-144
- Paz, Reuven. (2005). "Arab volunteers killed in Iraq: an Analysis" The Project for the Research of Islamist Movements, Occasional Papers, Vol. 3, No. 1, March. Available from [www.e-prism.org/images/PRISM\\_no\\_1\\_vol\\_3\\_-\\_Arabs\\_killed\\_in\\_Iraq.pdf](http://www.e-prism.org/images/PRISM_no_1_vol_3_-_Arabs_killed_in_Iraq.pdf)
- Piazza, J. A. (2006). Rooted in Poverty?: Terrorism, Poor Economic Development and Social Change. *Terrorism and Political Violence*. 18(1) 159-177
- Thomas E. Ricks. (2006). "Military Plays Up Role of Zarqawi," *The Washington Post*, April 10, p. A01.
- United States Department of State. (2006). *Country Reports on Terrorism 2005*, Office of the Coordinator for Counterterrorism, April, p. 131.

**Table 1: Description of Variables**

<b>Variable</b>	<b>Mean</b>	<b>Std. Dev.</b>	<b>Source</b>
Captured Insurgents	3.92	13.02	Multi-National Force-Iraq
Population (millions)	39.00	128.05	CIA World Factbook
Distance to Baghdad (Km)	2791.20	1414.54	U.S. Dept. of Agriculture
GDP per capita	\$12,677	\$12,076	CIA World Factbook
Percent Literate	85.34	19.64	CIA World Factbook
Civil Liberties Index	3.47	2.06	Freedom House
Political Rights Index	3.61	2.30	Freedom House
Coalition Member (1=yes)	.28	.45	Congressional Research Service
Percent Muslim	42.81	43.17	CIA World Factbook
Infant Mortality (per 1,000 live births)	31.34	33.58	CIA World Factbook

---

Notes:

Coalition member equals one if country ever contributed troops to the Iraq war effort.

Civil Liberties and political rights indexes are on a 1 to 7 scale, with 7 indicating the lowest possible level of rights.

Sample size is 76 countries in the Middle East, Northern Africa, Europe and Central Asia.

**Table 2. Negative Binomial Models for MENAECA Countries**  
**Dependent Variable: Number of Captured Insurgents**

Explanatory Variable	Model		
	(1)	(2)	(3)
Ln Population	0.803 (0.269)	0.784 (0.241)	0.737 (0.200)
Ln Distance to Baghdad	-1.833 (0.519)	-1.285 (0.500)	-0.909 (0.465)
Ln GDP Per Capita	-0.153 (0.357)	1.142 (0.478)	0.062 (0.490)
Literacy Rate (%)	---	-0.024 (0.028)	-0.046 (0.026)
Civil Liberties (1=high, 7=low)	---	0.454 (0.212)	0.530 (0.188)
Coalition Member (1=yes)	---	-0.396 (1.010)	-0.091 (0.897)
Muslim (%)	---	0.023 (0.011)	0.020 (0.009)
Infant Mortality Rate	---	---	-0.057 (0.020)
Log Likelihood	-109.05	-96.15	-91.87
Pseudo R-Square	0.09	0.20	0.23

Notes: Estimates also include a constant. Standard errors are in parentheses. Sample size is 76. Mean (standard deviation) of dependent variable is 3.92 (13.02).

**Table 3. Negative Binomial Models for Sample of Countries whose Capital City is within 3,000 Kilometers of Baghdad**

**Dependent Variable: Number of Captured Insurgents**

Explanatory Variable	Model		
	(1)	(2)	(3)
Ln Population	0.962 (0.420)	0.799 (0.381)	0.772 (0.292)
Ln Distance to Baghdad	-2.021 (0.819)	-2.586 (1.004)	-1.634 (0.833)
Ln GDP Per Capita	-0.105 (0.654)	0.451 (0.555)	-0.738 (0.575)
Literacy Rate (%)	---	-0.025 (0.039)	-0.047 (0.033)
Civil Liberties (1=high, 7=low)	---	0.764 (0.377)	0.678 (0.276)
Muslim (%)	---	0.027 (0.015)	0.031 (0.013)
Infant Mortality Rate	---	---	-0.068 (0.023)
Log Likelihood	-73.90	-63.72	-59.03
Pseudo R-Square	0.08	0.20	0.26

Notes: Estimates also include a constant. Standard errors are in parentheses. Sample size is 47. Mean (standard deviation) of dependent variable is 5.75 (16.26).



**Table 4. Actual and Predicted Number Captured; Five Largest Positive and Negative Outliers based on model in Column 3 of Table 2**

<u>Country</u>	<u>Actual</u>	<u>Predicted</u>	<u>Residual</u>
----------------	---------------	------------------	-----------------

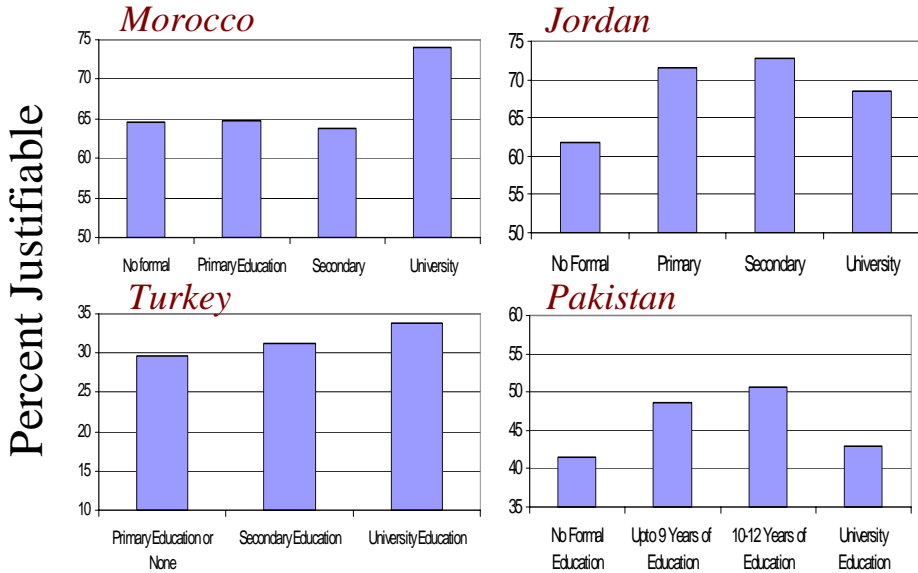
*5 Largest Negative Outliers*

Saudi Arabia	32	136.8	-104.8
Iran	13	40.4	-27.4
Kuwait	1	10.0	-9.0
Pakistan	0	8.6	-8.6
UAE	2	10.0	-8.0

*5 Largest Positive Outliers*

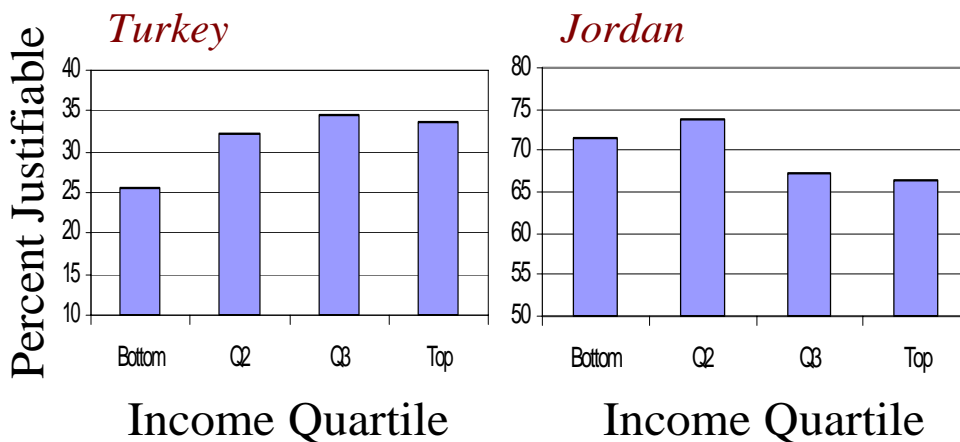
Tunisia	10	4.9	5.1
Jordan	17	3.9	13.1
Egypt	78	59.9	18.1
Syria	66	43.9	22.1
Sudan	41	5.8	35.2

Figure 1. What about suicide bombing carried out against Americans and other Westerners in Iraq? Do you personally believe that this is justifiable or not justifiable?



Source: 2004 Pew Global Attitudes Survey.

Figure 2. What about suicide bombing carried out against Americans and other Westerners in Iraq? Do you personally believe that this is justifiable or not justifiable?



Source: 2004 Pew Global Attitudes Survey.