

A THEORY OF THE ISLAMIC REVIVAL

Jean-Paul Carvalho*

Department of Economics
University of Oxford

jean-paul.carvalho@economics.ox.ac.uk

Abstract

There has been a dramatic surge in Islamic participation and values since the 1970s. We propose a theory of the contemporary Islamic revival based upon two forms of relative deprivation – envy and unfulfilled aspirations. To analyze these motivations, a behavioral model of religion is developed in which agents have reference-dependent preferences. We demonstrate that raised aspirations, low social mobility, high income inequality and poverty are intimately related, not separate causes of a religious revival. As such, the origins of the Islamic revival are traced to a combination of two developments: (1) a *growth reversal* which raised aspirations for upward mobility and subsequently left aspirations unfulfilled among the educated middle class, (2) increasing *income inequality* and impoverishment of the lower-middle class. The sexual revolution in the West and rapid urbanization in Muslim societies intensified this process of religious revival.

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1 Introduction

The Islamic revival is one of the most important social movements of the twentieth century, a phenomenon “vast in geographical scope, affecting every single Muslim country from North Africa to South-east Asia” (Berger 1999, p. 7). This surge in religious participation and values in Muslim societies since the 1970s lurks in the background of debate on the clash of civilizations, the so-called war on terror and the ‘failure’ of multiculturalism. More generally, religious revivals have been widespread and recurrent events throughout history (El Guindi 1981, p. 466). This paper is an attempt to shed some light on the origins of the contemporary Islamic revival.¹

The Islamic revival is part of a broader puzzle. Thinkers as diverse as Voltaire, Jefferson, Marx, Comte, Müller, Spencer, Durkeim, Weber and Freud all predicted that the advent of industrial society would mark the decline of religious belief and institutions.² This *secularization thesis* seemed to be confirmed by developments in Muslim societies up until the 1970s. Political moves toward secularization in countries such as Turkey, Iran, Egypt and Syria coincided with a popular shift away from religious activity and values. By the 1930s, Islam had become merely an inherited culture rather than a source of practical guidance for a large part of the educated elite in Muslim societies. They were living largely outside the bounds of the *sharia*; prayers and fasting were less frequently observed, and the consumption of alcohol was rising (Hourani 2005, p. 345-6). The 1970s, however, marked a specular shift toward Islam. At the personal level, religious participation, values and identification strengthened, as exemplified by the surge in veiling throughout the Muslim world. Veiling was almost completely absent in Cairo in 1969 (Abu-Lughod 1971); but by 2000 “a staggering majority of over 80 percent” of Cairene women wore some form of veil (Bayat 2007). Islamic social organizations, banks and political groups also came to play a prominent role in public life. What accounts for this dramatic reversal of fortunes?

In this paper, we develop an analytic narrative of the contemporary Islamic revival and a novel theoretical framework that explains some of its key features. Standard theoretical frameworks in the economics of religion literature fail to explain several important facts. The religious household production model (Azzi & Ehrenberg 1975) cannot explain why religious commitment tends to be higher in countries with greater economic inequality (Norris & Inglehart 2004). The religious club goods model (Iannaccone 1992) predicts that demands for religious sacrifice increase with real wages and subsidies for religious groups (Berman 2000). Yet real wages have been falling in Muslim societies since the mid-1970s (Owen & Pamuk 1998), while demands for religious sacrifice (e.g. veiling) have increased dramatically (e.g. Ibrahim 1980, Ayubi 1991, Bayat 2007). Rather than being subsidized, religious groups in countries such as Egypt, Turkey, Iran and Algeria have been vigorously repressed by secular elites.

We contribute to the economics of religion literature a behavioral model of religion based upon relative deprivation. Runciman (1966, p. 10) proposes that person *i* ex-

¹On the contemporary Islamic revival, see Hunter (1988), Esposito et al. (1991), Ayubi (1991), Esposito (1999), Lapidus (2002), Wickham (2002), Kepel (2003) and Bayat (2007).

²See Stark (1999), Berger (1999), Wallis & Bruce (2001) and Norris & Inglehart (2004).

periences *relative deprivation* of object X when i wants but does not have X , and i sees some other person(s), which may include himself at some previous or expected time, having X (whether or not this is or will be the case). We consider two salient forms of relative deprivation – envy and unfulfilled aspirations – which fit this definition. To analyze these motivations, we develop a behavioral model of religion based upon *reference-dependent preferences* (see Kahneman & Tversky 1979, Köszegi & Rabin 2006). The critical psychological mechanism required for rising relative deprivation to lead to a religious revival is that religious activity produces religious values which enable agents to cope with envy and unfulfilled aspirations. Agents then face the choice of working harder to meet their income aspirations or dropping out of the status race by devoting more time to religious activity. In this way, they can ‘immunize’ themselves against negative income comparisons. With only two departures from a neoclassical model of labor supply, we demonstrate that raised aspirations, low social mobility, high income inequality and poverty are intimately related, not separate causes of a religious revival. As such, we trace the origins of the contemporary Islamic revival to a combination of two developments: (1) a growth reversal in Muslim societies, and (2) increasing income inequality and impoverishment of the lower-middle class. State-led development and free access to education produced rapid, but unsustainable growth, raising aspirations for upward mobility based upon higher education in the 1950s and 1960s. The subsequent growth reversal in the region, particularly in the 1980s, meant that many university graduates, especially those from rural backgrounds who lacked connections (*wasta*) or desirable skills (e.g. English-language skills), were left with unfulfilled aspirations. Thus, *inter alia*, our analysis explains why the educated middle class and recent migrants to cities were the most active participants in the Islamic revival.

The idea that social movements are fueled by relative deprivation dates back at least to de Tocqueville (1856/1986): “the French found their position all the more intolerable as it became better.” In an influential book, Gurr (1970) proposed that relative deprivation explains why people engage in political violence (rebellion, coups, riots, etc.). Among the myriad hypotheses regarding the contemporary Islamic revival, several authors have identified relative deprivation as the basis for the rise in moderate Islamic movements (Wickham 2002, ch. 3), religious fundamentalism (Amin 1995, ch. 8; Hoffman 1995) and radical groups (Ibrahim 1980; Ayubi 1991, ch. 7; Gambetta & Hertog 2007). The ideas expressed in this paper are closest to those in Wickham’s (2002) book-length treatment of Islamic mobilization in Egypt. Ayubi (1991) encapsulates this perspective on Islamic movements: “Regardless of the country-specific peculiarities... [t]hey have all appeared in an environment of rising expectations, poor achievements and frustrated hopes” [p. 176]. He adds that “Islamists are not angry because the aeroplane has replaced the camel; they are angry because they could not get on the aeroplane” [p. 177].

We make several contributions to this literature. First, we develop a formal theory which brings two salient forms of relative deprivation – envy and unfulfilled aspirations – into a unified theoretical framework, based upon reference-dependent preferences. Secondly, we are the first, to our knowledge, to emphasize the tradeoff agents face between working harder to meet their income aspirations and dropping out of the

status race by devoting more time to religious activity. The key psychological mechanism we identify is that devoting more time to religious activity generates religious values which 'immunize' agents against negative income comparisons. Prior work has generally taken it to be axiomatic that relative deprivation causes a turn toward religion.³ Several authors posit that frustrated youth join Islamic political organizations in a bid to alter their economic circumstances by forcing a change in political institutions (e.g. Ibrahim 1980, Ayubi 1991, Kepel 2003). However, such collective action to alter individual circumstances runs into a massive free-rider problem. We show how this free-rider problem can be overcome if participation in Islamic organizations changes preferences to help agents cope with relative deprivation. Thirdly, we demonstrate that growth reversals, rising inequality, poverty and unfulfilled aspirations for upward mobility are all intimately related causes of a religious revival. By showing that none of these factors are sufficient by themselves, our model makes a significant contribution to social movement theories based upon relative deprivation.

Our assumption that religious activity produces religious values, which help people to cope with envy and unfulfilled aspirations by placing less importance on the object of envy/aspiration (e.g. income, wealth), accords with Bainbridge's (1997) account of new religious sects among the poorer classes in North Carolina in the 1920s: "[l]acking any of the symbols of happiness in the secular community, such as fine clothing and jewelry, they rejected those trifles in favor of the divinely conferred status of being sanctified or reborn in the Holy Spirit" (Bainbridge 1996, p. 34). In addition to our formal results, we argue that religious values not only de-emphasize material comparisons, they also accentuate moral comparisons. In their review of the psychological literature on envy, Smith & Kim (2007) claim that a common psychological coping mechanism is for a person to "focus on the moral baseness of the target of their envy" [p. 56]. Accordingly, we argue that the satisfaction of moral superiority helps agents better cope with relative deprivation. As a consequence, we propose that the process of religious revival in Muslim societies was intensified by the sexual revolution in the West and rapid urbanization caused by the urban concentration of state-led modernization efforts. Large numbers of recent migrants to cities came face to face with the alien values adopted by urban elites. With the onset of economic crisis, they could not compete with established elites on economic grounds, but they could do so on a moral basis. Hence cultural and economic polarization went hand in hand.

The remainder of the paper is structured as follows. Section 2 surveys various religious indicators and extant theories of the contemporary Islamic revival. In section 3, we review two leading models in the economics of religion literature and present our model with reference-dependent preferences. The analysis of the model is conducted under the envy formulation of relative deprivation. In section 4, we explore the unfulfilled aspirations formulation. Section 5 sets forth our theory of the Islamic revival, with support from the recent economic and social history of Muslim societies.

³For example, Gurr (1970) relies upon the 'frustration-aggression hypothesis' under which frustration which is not met by a remedial response leads to aggression. Again, Wickham's (2002, ch. 7) excellent work on Egypt is an exception. See also Ayubi (1991, p. 134).

2 The Islamic Revival

The contemporary Islamic revival is often equated with the rise of fringe militant groups, even though their terrorist acts are repudiated by the broader Islamic movement (Wickham 2002, p. 3).⁴ As Berger (1999) argues, it would also be “a serious error to see it only through a political lens. It is an impressive revival of emphatically religious commitments” [p. 7]. We focus in this paper on explaining the broad-based rise in religious activity and values in Muslim societies since the 1970s:⁵

The indices of Islamic reawakening in personal life are many: increased attention to religious observances (mosque attendance, prayer, fasting), proliferation of religious programming and publications, more emphasis on Islamic dress and values, the revitalization of Sufism (mysticism). This broader-based renewal has also been accompanied by Islam’s reassertion in public life: an increase in Islamically oriented governments, organizations, laws, banks, social welfare services, and educational institutions. (Esposito 1999, p. 10)

2.1 Indicators of Revival

The voluminous historical and anthropological literature on the Islamic revival documents a massive surge in religious activity, values and identification in Muslim societies around the world since the 1970s. For example, Esposito et al. (1991) compile a 111-page bibliography of historical and ethnographic accounts of the contemporary Islamic revival. The dearth of time-series data on religiosity in Muslim societies means that our theory is guided primarily by this vast literature. Indeed, we are not aware of any attempt to systematically gather statistical evidence on the revival in Islam. In this section, we provide a brief overview of our own analysis of data from the World Values Survey [WVS], as well as existing survey, ethnographic and historical evidence, to clearly illustrate the phenomenon we are trying to explain.

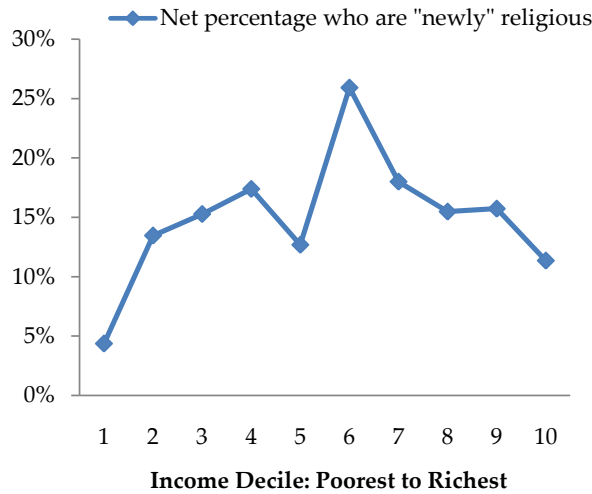
To begin with, we use WVS data to calculate the difference between the percentage of Turkish respondents who self-report being “a religious person” and the percentage who report being “raised religiously.” This yields a measure of the (net) percentage of Turks who have turned religious. Figure 1 summarizes the data by income decile. The surge in religiosity is economically significant and clearly more pronounced in the middle of the income distribution, where the average (net) percentage of Turks who have turned religious typically exceeds 15 percent. We shall provide an explanation for this pattern (see section 5.2).

Mutlu (1996) provides evidence of a rise in religious *belief* since the 1970s in Turkey. Surveys of students at the University of Ankara were conducted in 1978 (before the climax of the Iranian revolution) and 1991. Figure 2 shows that students surveyed

⁴On the issue of terrorism, see Ibrahim (1980), Hoffman (1995), Krueger (2007) and Gambetta & Hertog (2007).

⁵See Roy (2004), Morin & Horowitz (2006), Nyiri (2007) and Mirza et al. (2007) for evidence of a surge in religious commitment among Muslims living in Europe and America.

Figure 1. Becoming Religious in Turkey



Data Source: World Values Survey 1996. The figure plots the difference between the percentage of Turkish respondents reporting to be “a religious person” and the percentage reporting to have been “raised religiously.”

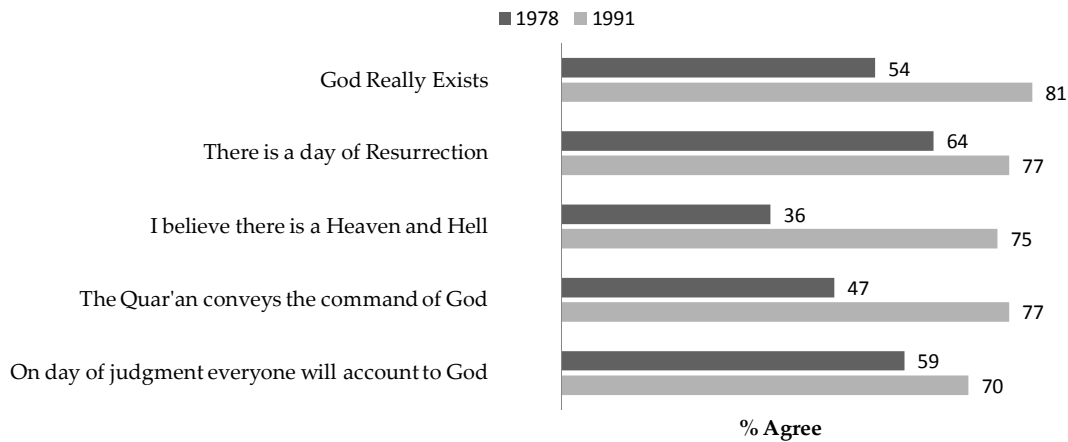
in 1991 exhibit far greater ideological commitment to Islam than those in 1978. They are more likely to express a belief in God, the existence of heaven and hell, the day of judgment, and the divine revelation of the Qur’an. This is a striking trend in the secular state of Turkey.

In contrast to the erosion of traditional religious *values* in the West since the 1960s, regarding sexual mores and women’s rights in particular, there has been a strengthening of religious values in Muslim societies (e.g. Norris & Inglehart 2004). Signs of a resurgence in Islamic values since the 1970s include the surge in popularity of Islamic books and journals (Wickham 2002, p. 101-2) and sermons recorded on cassette (Hirschkind 2006), as well as the “repentance” of many Egyptian singers, dancers and actresses since the 1980s who left their professions and publicly denounced their art as shameful (van Nieuwkerk 2007). We find that WVS respondents in Muslim societies are far more likely than those in Western nations, including the highly-religious United States, to describe homosexuality, prostitution, abortion and divorce as “never justifiable.”⁶ This is consistent with Norris and Inglehart’s analysis of WVS data, which concludes that “the basic cultural fault line between the West and Islam does not concern democracy- it involves issues of gender equality and sexual liberalization” [p. 155].

Another striking feature of the contemporary Islamic revival is its public character. Apart from the political movement there has been a move toward spontaneous public expression of Islamic *identity*, through informal *dawa* or missionary work, use of Islamic greetings and terms (such as *Mashallah*- “Whatever God wills”) in speech, and especially the various forms of veiling that have been adopted by Muslim women, as well as the beard worn by Muslim men. The veil is perhaps the most potent symbol of Islamic revival. In countries such as Egypt, veiling is a highly counter-intuitive

⁶Table available from author upon request.

Figure 2. Revival in Religious Belief in Turkey



Source: Mutlu (1996) based on surveys of students at University of Ankara, 1978 and 1991.

phenomenon. After Huda Shaarawi famously removed her face veil in Cairo in 1923, Egyptian women of the middle and upper classes came to adopt Western modes of dress. Abu-Lughod (1971) writes about the Cairo of 1969, “One rarely sees *jalabiyah* (traditional robes)... Almost no women are veiled” [p. 239].⁷ Yet by 2000, Bayat (2007) claims that veiled women in Cairo constitute “a staggering majority of over 80 percent.” In a set of informal surveys, he estimates that 80 percent of women at the Cairo Book Fair in 2000 wore some type of veil; 67 percent did likewise at a shopping mall in Zamalek, the most “westernized” Cairo neighborhood. This is a very dramatic shift in veiling in only thirty years.

The renewed political influence of Islamic principles and organizations is probably the most well-known indicator of an Islamic Revival. The reversal in political fortunes is exemplified by the Islamic revolution in Iran which overthrew the secular government of Muhammad Reza Shah in 1978-9. From the 1920s to the Arab defeat in the 1967 Six-Day war, the political tide ran clearly in favor of secularizing forces- primarily authoritarian governments- in Muslim societies such as Egypt, Turkey, Iran and Syria. Table 1 documents the religiopolitical developments over this period. Consider the case of Turkey: Mustafa Kemal Ataturk established a secular state in Turkey, banning Islamic schools in 1924 and prohibiting wearing of the veil in public schools, universities and government institutions in 1925. The traditional *fez* was banned outright. The Islamic Hijra calendar was replaced by the Christian Gregorian calendar in 1925, the Arabic script was replaced by the Latin script in 1928 and the weekly holiday was switched from the traditional Islamic day of Friday to Sunday in 1935. Most importantly, *sharia* law was replaced by the Swiss civic code and the Italian penal code (El-Ghonemy 1998).

Political moves toward secularization coincided with a popular shift away from religious activity and values. By the 1930s, Islam had become merely an inherited cul-

⁷Cited in Bayat (2007). El Guindi (1981, p.465) claims that veiling in Egypt resumed after the 1973 war with Israel.

Table 1: Religiopolitical Developments in Muslim Societies: 1920-1967

| Year | Event |
|---------|--|
| 1923 | Voluntary deveiling led by Huda Shaarawi in Cairo |
| 1924 | Egyptian women receive free secular education |
| 1924 | Islamic schools banned; clergy subordinated to Dept of Religious Affairs in Turkey |
| 1925 | Veil banned in Turkish universities and government institutions, <i>fez</i> banned outright |
| 1928 | New law codes replace the <i>sharia</i> in Iran |
| 1928 | al-Banna founds Muslim Brotherhood [MB] in Egypt; calls for Islamic state and <i>sharia</i> |
| 1934 | Teaching Training Act provides for secular education system in Iran |
| 1935 | University of Tehran established with European-educated faculty |
| 1936 | Reza Shah bans veil and passion plays in Iran |
| 1936 | New Iranian law makes it impossible for <i>ulama</i> to sit in courts of law |
| 1937 | Legal separation of religion and state introduced to Turkish constitution |
| 1940s | 'Islamic Economics' founded in India by Mawdudi and others |
| 1941 | Mawdudi forms Jama'at-i Islami in British India, calling for Islamic state and <i>sharia</i> |
| 1942 | MB established in Jordan |
| 1949 | First MB branches in Sudan |
| 1949 | State-controlled Divinity Faculty established at Ankara University |
| 1950 | Sayyid Qutb returns from the United States scandalized, joins MB |
| 1961 | Nasser adds secular subjects and women's faculty to Al-Azhar University |
| 1967/75 | Initial family protection laws in Iran regulate divorce and polygyny |
| 1967 | Arab failure in Six-Day War |

Sources include Lapidus (2002), Kepel (2003), Bayat (2007), Esposito (1999), Kuran (2004)

ture rather than a source of practical guidance for a large part of the educated elite in Muslim societies. They were living largely outside the bounds of the *sharia*; prayers and fasting were less frequently observed, and the consumption of alcohol was rising (Hourani 2005, p. 345-6). This was the milieu in which the Muslim Brotherhood was formed in Egypt by Hassan al-Banna in 1928 and the Jama'at-i Islami was formed in British India by Mawlana Abu 'Ala Mawdudi in 1941, both calling for social justice through strict adherence to the *sharia* and the establishment of a Muslim state. Though the Muslim Brotherhood and other Islamist organizations began to establish themselves throughout the Middle East, Africa and South and South East Asia, it was not until the 1970s that there was a popular Islamic social movement and widespread support for their program, following defeat in the Six-day war and widespread economic crisis (Ayubi 1991, p. 59).

The defeat of the combined forces of Egypt, Syria and Jordan by Israel in 1967 was a major historical turning point. Six years after Gammal Abdel Nasser fought the Six-day War in the name of pan-Arab nationalism and socialism, Anwar El Sadat waged the next war against Israel in the name of Islam (Esposito 1999, p. 15). Table 2 covers the major religiopolitical developments from 1967 to the present. Despite severe state opposition and repression in countries such as Egypt, Turkey and Algeria, Islamic principles and parties have assumed a highly prominent role in politics in Muslim societies. The Islamic revolution in Iran and the rise to power of the Islamically oriented AKP in Ataturk's secular republic are just two examples of this reversal in fortunes. Pakistan's Muhammad Zia-ul-Haq, Libya's Muammar al-Gaddafi, Bangladesh's Muhammad Ershad and Malaysia's Mahathir Mohamad have all used

Table 2: Religiopolitical Developments in Muslim Societies: 1967-Present

| Year | Event |
|------------|--|
| 1969 | Chinese-Malay riots lead to policies favoring Malay Muslims |
| 1973 | Anwar Sadat initiates 'holy war' against Israel |
| 1973 | Arab oil boycott; greater fin. support for Islamic organizations, esp. from Saudi Arabia |
| 1975 | First Islamic bank offering a range of commercial services opens in Dubai |
| 1978 | Somali wing of MB, Al-Islah, formed |
| 1978 | Zia-ul-Haq ushers in Islamic legal system in Pakistan |
| 1979 | Islamic tithe (<i>zakat</i>) made legal obligation in Pakistan, collected by government |
| 1979 | Islamic republic in Iran, ulama control law; Shah's women's rights reforms repealed |
| 1979 | Seizure of the Grand Mosque at Mecca by Sunni militants |
| late-1970s | Mujahideen formed to fight Soviet army in Afghanistan |
| 1981 | Anwar Sadat assassinated by religious extremists |
| 1983 | Harsh form of <i>sharia</i> implemented in the Sudan |
| mid-1980s | Major Islamic banks estab. in Turkey, gain tax breaks and regulatory concessions |
| 1975 | Formation of Hezbollah in Lebanon |
| 1987 | Higher education council in Turkey forbids veiling in class |
| 1989 | Al Nahda wins 14% of vote in Tunisia; subsequently banned and repressed |
| 1989 | MB in Jordan, Islamic Action Front, become largest group in parliament |
| 1990 | Islamic Salvation Front [FIS] in Algeria sweep municipal elections |
| 1991 | FIS win first round of parliam. elections, canceled by Algerian military, FIS banned |
| 1992 | Egypt's interior minister: all laws based on <i>sharia</i> , would never allow secular state |
| 1994 | First Islamic television station begins broadcasting in Turkey |
| 1995 | Leader of MB in Algeria receives over 25% of popular vote in presidential election |
| 1996 | Taliban take power in Afghanistan |
| 1996 | Necmettin Erbakan becomes Turkey's first Islamist Prime Minister |
| 1997-8 | Turkish military forces Erbakan to step down and bans Welfare Party |
| 2002 | Justice and Development Party (AKP) in Turkey is first Islamist party to form govt |
| 2002 | MB in Algeria win 7% of vote giving it 38 members in parliament |
| 2002 | MB representative in Bahrain, Al-Menbar, wins 8/40 seats, making it equal largest party |
| 2005 | MB in Egypt win 20% of parliam. seats, despite harassment and electoral irregularities |
| 2006 | Hamas wins parliamentary elections in Palestine |

Sources include Lapidus (2002), Kepel (2003), Bayat (2007), Esposito (1999), Kuran (2004).

Islam to legitimate their rule and transform previously secular regimes on the basis of Islamic symbols and principles (Esposito 1999). Even Saddam Hussein, the most secular and unIslamic leader in the Middle East, appealed to Islam during the 1991 Gulf war. Today, *sharia* has become the espoused basis for law in Egypt, Iran and Pakistan, while "Islamic activists have become an accustomed part of the political process, participating in national and local elections, scoring an impressive victory in Algeria's municipal elections, emerging as the chief opposition parties or groups in Egypt, Tunisia, and Jordan, and serving in cabinet positions in the Sudan, Jordan, Pakistan, Iran and Malaysia" (Esposito 1999, p. 21).

There has also been a proliferation of (largely apolitical) Islamic social organizations which provide healthcare, education and financial aid, often centered around private mosques (see Wickham 2002, p. 99-102). In Egypt, Islamic organizations accounted for at least half of all welfare organizations in the late 1990s, with the number of beneficiaries of health services from such organizations rising from 4.5 million in 1980 to 15 million in 1992 (Bayat 2002, p. 12). The number of independent mosques in Egypt rose

from 20,000 in 1970 to more than 46,000 in 1981 (Wickham 2002, p. 98). In 1970, university student unions in Cairo were the bastion of secular leftist intellectuals. By the end of the 1970s, Islamist student leaders controlled student unions in most faculties at Cairo University and other higher educational institutions (Wickham 2002, p. 2). In addition, the Muslim Brotherhood had gained control of many of Egypt's professional associations by the early 1990s, including the engineers', doctors', pharmacists', scientists' and lawyers' associations (Wickham 2002, p. 2). Finally, Islamic principles have had a profound impact on economic policy and business practice through the discipline of Islamic economics, which was also founded by Mawdudi. Kuran (2004) documents how Islamic economics has since the 1970s spurred the development of a multi-billion dollar Islamic banking sector, state support for wealth distribution through the *zakat* (tithe) system and an emphasis on Islamic norms in business.⁸

2.2 Demographic Profiles

As a first step toward understanding the factors behind the resurgent appeal of religious participation and values, we examine in this section the demographic characteristics of members of Islamic organizations. There is a consensus in the literature (see Ibrahim 1980, Ayubi 1991, Hoffman 1995, Wickham 2002, Bayat 2002, Gambetta & Hertog 2007) that members of Islamic organizations are typically:

- Young (early twenties)
- Middle or lower-middle class (e.g. father in middle grade of civil service)
- University-educated, often in elite faculties (engineering, science, medicine)
- Have surpassed parents' educational and occupational attainment
- Urban-based (e.g. peripheral suburbs of Cairo)
- Recent migrants from rural areas or small towns
- Have cohesive families, no major life traumas

These key demographic characteristics were first documented by Ibrahim (1980) in his landmark study of two Egyptian militant groups- Shabab Muhammad and al-Takfir w'al-Hijra. Surveying a wide range of militant Islamic organizations, Gambetta & Hertog (2007) also show that they attract primarily young university graduates, in particular those with engineering degrees. For our purposes, it is important that this pattern of Islamic appeal has been confirmed for the broader Islamic movement in Egypt (Mitchell 1993, Wickham 2002, Bayat 2002), Jordan (Azem 1997), Tunisia (Hoffman 1995), Yemen (Clark 2004) and elsewhere (Ayubi 1991).⁹ Accordingly, Wickham (2002)

⁸In 1979, Pakistani banks were ordered to offer an interest-free alternative to the conventional savings account and to cease interest-based operations within five years. While the policy was never fully enforced, *zakat* was made a legal obligation in Pakistan and collected by the government; it was also made compulsory in Malaysia, Saudi Arabia and the Sudan (Kuran 2004).

⁹Ibrahim (1980) claims that "[t]hese [militant] Islamic groups represent the small hard core of a broad but amorphous mass of religiosity in the society as a whole" [p. 425]. That moderate and mil-

claims that “the prototypical Islamic activist is not an illiterate peasant or labourer but a young, upwardly mobile university student or professional, often with a scientific or technical degree” [p. 1].

2.3 Theories of the Islamic Revival

In this paper, we set out to explain the motivations for the rise in religious activity and values in Muslim societies since the 1970s. We are not so concerned with changes in the character of Islamic discourse or the strategies that Islamic organizations have used to socialize and mobilize large numbers of people into religious activity, but the factors which make Islamic values and participation appeal to educated youth. In the next section, we develop a theory of the Islamic revival based upon relative deprivation. In this section, we review three alternative theories (that are not inconsistent with our theory), which we have extracted from the historical and anthropological literature. The common theme in all these explanations is that people have turned toward Islam in response to some sort of “crisis.”¹⁰

2.3.1 Cultural Defense

People tend to strengthen traditional values when they feel that their culture, especially their system of moral values, is under attack. Dekmejian (1988) writes:

A sense of xenophobia pervades Muslim society, the feeling that Islam itself is facing a mortal threat. In the opinion of revivalist intellectuals, the very integrity of the Islamic culture and way of life is threatened by non-Islamic forces of secularism and modernity, encouraged by Muslim governments... Western cultural values and mores are vehemently rejected as being alien to Islam. To this end, the mass media are enjoined to propagate Islamic values and practices instead of disseminating foreign cultural influences. [p. 10-11]

While the legacy of colonialism lingers in the memory of many Muslims, today the global community of Muslims (*umma*) is believed to be under siege by the “war on terror” and Israeli occupation. Many secular regimes in Muslim societies, including

itant Islamic activists share some key characteristics is not altogether surprising given the recruitment procedures employed by some militant groups: “Typically the older members would observe young worshippers in the college or neighborhood mosque. If the young persons appeared to be deeply religious (especially if they observed the dawn prayer), they would be approached to attend religious discussion after regular prayers. It was during these discussion that the potential member was discovered already to be or capable of becoming politically conscious” (Ibrahim 1980, p. 438). This suggests that religious commitment might be a necessary but not sufficient condition for recruitment to a militant religious organization. But in no way do we claim that religiosity leads to extremism or militancy. See for example the study on the positive effects of the Hajj, in terms of religious tolerance and attitudes toward women, by Clingingsmith, Khwaja & Kremer (2009).

¹⁰As an illustration, Dekmejian (1988) points to “identity conflict, legitimacy crisis, political conflict, class conflict, culture crisis, and military impotence, which act as the catalysts of the Islamic revivalist responses” [p.7].

Egypt and Pakistan, are financially supported by Western nations and foreign companies and are perceived to be representing these foreign interests at the expense of their citizens. Internally, Islam is seen to have been under attack since at least the 1920s by state-led modernization programs implemented by secular elites (see Table 1): “the process of secular, “valueless” social change was identified as the cause of sociomoral decline, a major contributor to the breakdown of the Muslim family, more permissive and promiscuous societies, and spiritual malaise” (Esposito 1999, p. 14). Leaders have also deviated from Islamic norms in their personal behavior and lifestyles thus creating an opening for foreign cultural influences which have resulted in moral decay. Thus, it is believed that people have strengthened their religious commitment in response to the multifarious threat to their traditional beliefs and values.

2.3.2 Identity, Continuity & Certainty

Why did Muslims respond to cultural threat by so actively strengthening their religion? Hoffman (1995) states that “Islamic fundamentalism is a revolt of young people who are caught between a traditional past and a higher secular education with all its implications of Western intellectual impact and contact with materialistically oriented culture of the urban environment” [p. 210]. Rapid social change and urbanization had led to massive social and psychological displacement; old sources of identity including family, regional and tribal identities were negated in an environment in which a large proportion of interactions occurred between strangers. The resistance to European occupation and control was originally expressed in terms of a more encompassing national identity. This movement reached its zenith with Nasser’s pan-Arabism, which became discredited by defeat in the 1967 Six-Day War. An identity vacuum was created which was filled by Islamic revivalist thought. Islam became the “only remaining haven of identity and authenticity” (Dekmejian 1988, p. 10). In fact, what had developed was a more universalistic and international form of Islam (*tajdid*), based chiefly on the Qur’an and Sunna rather than the veneration of local saints and the esoteric details of religious law. Lapidus (1997) claims that “[i]n fragmented societies *tajdid* provided the basis of commitment to a common cause, and helped transcend fragmentation in favor of religious and ideological unity” [p. 453].

Islam, however, was more than a source of identity: it was also a worldview through which young people caught in the midst of rapid social, economic and cultural change could make sense of an unfamiliar world. By the 1970s, the dramatic failure of secular modernization programs to meet expectations, including Ataturk’s reforms in Turkey, the Shah’s ‘White Revolution’ in Iran, the Arab socialism of Nasser and the Iraqi and Syrian Baath parties, and Sadat’s economic liberalization in Egypt, had made both socialism and liberalism unappealing ideologies (Ibrahim 1980, Dekmejian 1988, Esposito 1999). By emphasizing familiar and ‘unchanging’ values, Islamic groups such as the Muslim Brotherhood, provided a source of certainty. They also provided a unified and comprehensive explanation for the various problems faced by Muslim societies: “all the external setbacks and internal socioeconomic ills of Egypt (and other nations in the Muslim world) are fairly and squarely attributable to a corrupt, inept system that has vastly and intentionally, deviated from the correct path embodied in the *Shari’a*”

(Ibrahim 1980, p. 430-1). No failure was more heavily attributed to the turn away from Islam than the humiliating defeat of the combined forces of Egypt, Syria and Jordan in the 1967 war:

On the other side, however, Israel- which is perceived by most Middle Easterners as a 'religious formula'- has conquered and flourished. It is not altogether surprising, therefore, that most aspects of the current religious revival in the Arab world appear to have followed closely behind the 1967 defeat by Israel: not only was there a marked growth in general religiosity and an increase in membership of the 'mystic' orders after this tragic event, but on a more militant level, the emergence of what I have termed the neofundamentalist Islamic groups also followed the traumatic experience of the Six Day war, and was to a large extent influenced by a 'religious interpretation' of Israel's victory and the defeat of the Arabs. [Ayubi (1991), p. 59]

The religious interpretation was so popular, because it was a source of great hope in that the remedy was simple: "the sure solution for all such problems is a system that commits itself and that indeed begins to implement the *sharia*" (Ibrahim 1980, p. 431). This explains why revivalist thinkers have everywhere called for the establishment of an 'Islamic state' along with social, economic and political reforms to make all spheres of activity conform to the *sharia*.

2.3.3 Poverty & Social Service Provision

Poverty and lack of education are often cited as a cause of religious appeal and militancy. Chen (2008) conducts an econometric analysis of communal Quar'an study and Islamic school attendance in Indonesia following the 1997-98 financial crisis. He finds that households which experienced a 1 dollar decline in monthly per-capita non-food expenditures were 2 percent more likely to increase communal Koran study and 1 percent more likely to switch a child to Islamic school, but were no more likely to increase other communal activities or secular school attendance. Chen interprets this as evidence that religious participation provides access to communal social insurance. Accordingly, the effect of economic distress on religious participation is reduced by 80 percent in areas with high credit availability, and households who increase religious participation are less likely to need alms three months after the peak of the crisis. Chen concludes that increased risk of poverty can promote religious fundamentalism.

We have already noted the explosion of Islamic social organizations providing health-care, education and financial aid since the 1980s (see Wickham 2002, p. 99-102). Islamic social organizations have received financial support on the Sunni side from Saudi Arabia and other Gulf states following the oil boom in the 1970s and on the Shi'a side from Iran following the 1978-9 Islamic revolution (Wickham 2002). In addition, Bayat (2002) attributes their proliferation to state withdrawal of various social services and the removal of subsidies on essential foodstuffs, fuel and transportation. He lists several well-documented examples of Islamic political organizations who have built grassroots support through the provision of social services, including the Welfare Party in

Turkey, the FIS in Algeria and Hezbollah in Lebanon.¹¹

While Chen's (2008) social insurance thesis is likely to be valid for some sections of Muslim societies, it does not seem adequate as a general explanation for the Islamic revival. As noted in section 2.2, the typical member of an Islamic organization is well educated and is not among the urban poor, but the middle and lower-middle classes. In her study of Islamic social organizations in Cairo, Yemen and Jordan, Clark (2004) finds that even when Islamic organizations provide services to the poor, they supply middle class clients with superior services (at a price). Organizational attention is directed not to the poor, but to building ties between donors, middle class volunteers and employees (e.g. doctors, lawyers, teachers) and the middle class users of the services. As such, Clark concludes that "moderate Islamism is a movement of the marginalized, educated middle class, not of the disenfranchised poor" [p. 41]. The important question is: why do members of the educated middle class choose to donate to, work for and consume from Islamic rather than secular organizations?¹²

There is little evidence that the provision of social services has been used to raise religious awareness among university graduates. On the contrary, Wickham (2002) reports:

many graduates were unfamiliar with the services provided by Islamists. When asked whether the Islamists helped young people find jobs and housing, some graduates expressed disbelief. As one replied, "Who told you that? They don't help youth. If they did, all the youth would be pouring into the Islamic associations. You wouldn't find any of them on the streets." [p. 83]

Rather than financing dowries, suitably lavish weddings and furnished apartments which are customary requirements for marriage in Egypt, religious groups make a virtue of austerity, with many religiously committed couples simply settling into a room in their parents' house (Hoffman 1995, p. 208; Wickham 2002, p. 168). In other words, many Islamic organizations are more successful in providing 'psychological goods' (e.g. emotional comfort) than social services. We develop a theory in which it is not poverty *per se*, but inequality combined with the impoverishment of the educated middle class which plays a crucial role in the contemporary Islamic revival.

¹¹But note that few of the services provided by Hezbollah in Lebanon are free; it does not distribute free food, nor does it waive school fees for the poor (Bayat 2002, p. 13). In Pakistan, Andrabi et al. (2006) find that *madrassas* account for less than 1 percent of school enrollment and there is no evidence of a dramatic increase in *madrassa* enrolment in recent years. Islamic schools in Egypt "are not free of charge but private institutions that virtually exclude the poor" and are "geared largely toward the well-to-do, urban middle classes" (Bayat 2002, p. 13).

¹²While Chen (2008) builds on Iannaccone's (1992) influential club goods theory of religion, Iannaccone himself (p. 289) recognizes that any group, religious or otherwise, could inhibit free-riding in the provision of services such as social insurance by requiring that members make sacrifices which stigmatize them in the society at large (see section 3.1). So we are left with the question: what is distinctive about religious groups?

3 A Behavioral Model of Religion

3.1 An Economics of Religion Perspective

The economics of religion was initiated by Adam Smith in a largely ignored chapter of the *Wealth of Nations* (Smith 1776/1976, p. 740-776), in which he argued that competition among religious institutions leads to greater religiosity in society. We motivate our baseline model by reviewing the limitations of two standard (rational-choice) frameworks for modeling religious participation, which have since emerged in the literature. In the second contribution to the economics of religion, which came two hundred years later, Azzi & Ehrenberg (1975) developed an intertemporal household production model of religion in which agents trade off present-life consumption with after-life rewards which are generated through religious participation. To get the gist of their model, suppose that agents maximize the following utility function:

$$U(g, z) = u(g) + R(z) \tag{1}$$

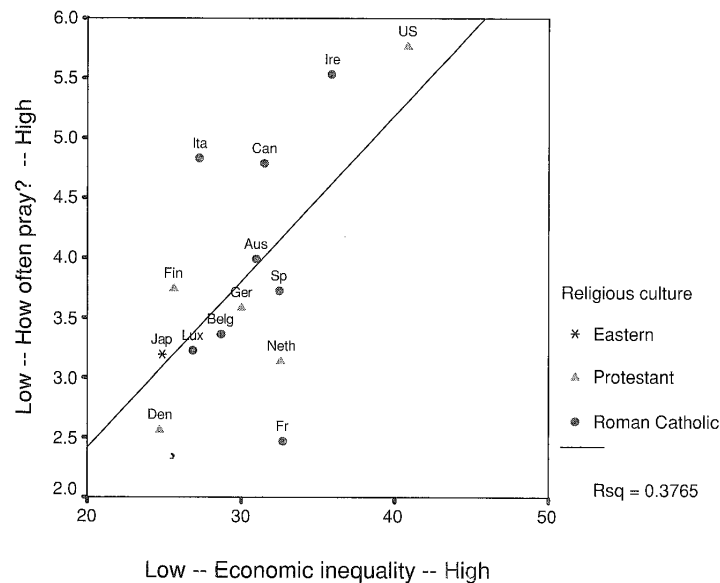
subject to goods and time constraints, where g is a secular commodity and z is a religious commodity. When production of the religious commodity is time-intensive relative to secular production, agents with lower wages devote more time to religious activity. As we have seen, real wages have been declining in Muslim countries since the 1980s. However, neither the household production model of religion or any other model in the economics of religion literature can explain why religiosity is generally increasing in economic inequality (Norris & Inglehart 2004). For example, Denmark and Japan both have low levels of inequality and also low levels of religiosity; the United States and Ireland have high levels of inequality and religiosity. Figure 3 plots an index of how often people pray in various countries against the country's Gini coefficient, which measures consumption inequality. By introducing reference-dependent preferences and endogenous religious values, we can explain how rising economic inequality and declining real wages can interact to produce a religious revival.

The other standard theoretical framework in the economics of religion literature is the religious club goods model developed by Iannaccone (1992). This model introduces the notion of a religious group and assumes that the return to religious activity is increasing in the aggregate effort exerted by group members. Specifically, agents maximize the following utility function:

$$U(g, z, \bar{z}) = u(g, s) + R(z, \bar{z}) \tag{2}$$

subject to goods and time constraints, where \bar{z} is the average contribution to the religious group and s is a measure of the *sacrifice* required by the religious group. Religious sacrifices (e.g. restrictive diet, distinctive clothing) stigmatize group members in the society at large, thereby reducing their utility from secular consumption. Since the 'quality' of the religious group, determined by \bar{z} , is a public good, groups can elicit

Figure 3. Inequality and Religiosity



Source: Norris and Inglehart (2004)

the socially optimal contribution by choosing $s > 0$ and thereby inducing members to shift effort toward religious activities, and screening out less committed members. The club goods model predicts that the intrusion of markets into religious communities, in the form of rising market wages, leads to stricter demands for sacrifice (Berman 2000). A striking example of this is the birth of ultra-orthodox Judaism during the Jewish emancipation in 18th and 19th century Europe which led to the assimilation of most European Jews into secular society. Berman (2000) demonstrates that subsidizing religious groups amplifies this effect, thus explaining the higher rates of religious school (*yeshiva*) attendance among ultra-orthodox Jews in Israel than elsewhere in the world. However, the club goods model clearly does not apply to the Islamic revival. Real wages have generally declined in Muslim societies since the 1970s (Owen & Pamuk 1998), yet demands for religious sacrifice (e.g. veiling) have increased dramatically (e.g. Ibrahim 1980, Ayubi 1991, Bayat 2007). Religious groups in countries such as Egypt, Turkey, Iran and Algeria have not been subsidized; in fact, they have been vigorously repressed by secular elites. The remainder of the paper will be devoted to a behavioral model of religion, based upon reference-dependent preferences, which explains key features of the Islamic revival.

3.2 The Baseline Model

Consider a society composed of a continuum of agents indexed by $i \in N = [0, 1]$. Agents choose their level of education and subsequently enter either the lower class $c_i = L$ or the upper class $c_i = H$. We shall denote membership in class c by $i \in c$. Agents in the upper and lower classes are subject to wage rates w_H and w_L respectively, where naturally $w_H > w_L$. Wages (w_L, w_H) are known in advance, so that the only source of uncertainty when choosing education and forming expectations is

whether an agent ends up in the lower or upper class. Agents then choose to allocate their time between work and religious activity. We shall now describe the complete structure of the game:

Date 0. Each agent $i \in N$ is assigned an ability level a_i .

Date 1. Every agent chooses their investment in education $e_i \in [0, 1]$. The cost of education is $k(e_i, a_i)$. We assume that for all a , $k(0, a) = \partial k(e, a) / \partial e|_{e=0} = 0$ and $\partial k(e, a) / \partial e|_{e=d} \rightarrow \infty$ as $d \rightarrow 1$. We also make the standard assumption (e.g. Spence 1973) that $\partial^2 k(e, a) / \partial e \partial a < 0$ for all e .

Date 2. Each agent $i \in N$ enters the upper class $c_i = H$ with probability $\mu_i = \theta e_i$, where $\theta > 0$ is the return to education. Each agent enters the lower class $c_i = L$ with complementary probability.¹³

After observing their class status and corresponding wage, every agent has one unit of time to allocate between work and religious activity (e.g. prayer, communal worship, religious education, volunteer work with religious organizations). Labor supply is denoted by h_i and religious activity by z_i . We assume that the price of religious activity is zero, so that agents spend their entire income on a composite consumption good.¹⁴ The price of this composite good is normalized to one. Utility during date 2 has two components: (i) consumption utility is denoted by $u(g)$, where g is the quantity consumed of the composite good, and $u(\cdot)$ is a strictly increasing and concave function; (ii) time devoted to religious activity z_i yields utility $R(z_i)$, where $R(\cdot)$ is a strictly increasing and strictly concave function. To guarantee an interior solution, we assume that $u'(d)$ and $R'(d)$ go to infinity as $d \rightarrow 0$.

Date 3. Agents in our model have reference-dependent preferences. At the beginning of date 3, they compare their income $y_i = w_i h_i$ at date 2 to their reference point (or target income) \bar{y}_i , which will be determined endogenously (in a manner to be specified below) as part of the equilibrium distribution of income in society. We assume that *comparison utility* for a representative agent i is $-\alpha(\bar{y}_i - y_i)_+^{1+\gamma}$, where $\alpha > 0$ is the relative weight on comparison utility and $(d)_+ \equiv \max\{0, d\}$ so that agents are only concerned with negative comparisons.¹⁵ In addition, we assume that $\gamma > 0$ so that our formulation is consistent with Clark and Oswald's concave-comparison utility (Clark & Oswald 1998). In this case, preferences exhibit a keeping-up-with-the-Joneses character. Therefore, date 2 and 3 utility for an agent who receives wage w is:

$$U(g_i, z_i; \bar{y}_i, w) = u(g_i) + R(z_i) - \alpha(\bar{y}_i - wh_i)_+^{1+\gamma} \quad (3)$$

We conduct a partial equilibrium analysis of the model: the return to education θ and

¹³This is the same formulation as in Piketty (1995) and Benabou & Tirole (2006a), except that they allow agents to be born into different classes, with agents born into the upper class enjoying a greater probability of ending up in the upper class irrespective of their educational attainment. Adding a mobility parameter to capture class privilege does not add any further insights to our model, whereas it does complicate the exposition of the results.

¹⁴Berman (2000) makes the same assumption in a club goods model of religion.

¹⁵Shalev (2000) also assumes that the reference point only enters the utility function when outcomes fall below the reference point.

the wage schedule (w_L, w_H) are treated as exogenous. The structure of the game is common knowledge. We restrict our attention to pure strategies throughout.

3.3 Envy & Religion

Analysis of the model will proceed as follows. For the remainder of this section, we focus on the subgame beginning at date 2, in which agents choose their labor supply h_i and religious activity z_i once their class status c_i has been realized. We refer to this subgame as the *religion game*. The analysis will be conducted under the more straightforward envy formulation of relative deprivation. The religion game with envy introduces several of the paper’s key insights. In section 4, we proceed to analyze the entire game under the unfulfilled aspirations formulation, which yields a richer set of results.

We begin by assuming that the reference point for all agents equals the income of upper-class agents, i.e. $\bar{y}_i = y_H = w_H h_H$ for all $i \in N$. Comparison utility is then interpreted as *envy* and α parameterizes the intensity of envy. Anthropologist George M. Foster (1972) claims that envy is “a pan-human phenomenon, abundantly present in every society, and present to a greater or lesser extent in every human being” [p. 165].¹⁶ We shall explore how envy may or may not lead to a surge in religious activity in response to rising income inequality.

In the religion game, we can write the optimization problem for an agent who receives wage w as follows:

$$\begin{aligned} \max_{(h_i, z_i)} \quad & U(g_i, z_i; \bar{y}_i, w) \\ \text{s.t.} \quad & g_i = wh_i \\ & h_i + z_i = 1 \end{aligned} \tag{4}$$

The first constraint in (4) is the goods budget constraint and the second is the time budget constraint. Substituting the constraints into the objective function, (4) reduces to an unconstrained optimization with a single choice variable h_i , or equivalently $z_i = 1 - h_i$. As such, we can rewrite the utility function as $U(h_i; \bar{y}_i, w_{c_i})$. Throughout the analysis, h will denote an arbitrary labor supply in $[0, 1]$, whereas h_{ic} will denote *equilibrium* labor supply for a member i of class c . For the remainder of the paper, we impose the mild condition that equilibrium income for all $i \in L$ is increasing in w_L . In the appendix, we explicate conditions on the primitive functions which guarantee this holds. For ease of exposition, we simply state the condition here:

CONDITION 1. Equilibrium lower-class income is increasing in wage: Let y_{iL} (resp.

¹⁶Envy explains trends in self-reported well being (e.g. Easterlin 1974, Clark & Oswald 1996), consumption behavior (e.g. Van de Stadt & Van de Geer 1985), compressed intra-firm wage differentials (Frank 1985, ch. 3.4), large inter-industry wage-differentials (e.g. Dickens & Katz 1987), and the willingness of players in experimental games to pay to reduce other people’s incomes (Zizzo & Oswald 2001, Zizzo 2003). For reviews see Elster (1998), Gächter & Thoni (2006) and Zizzo (2007).

y'_{iL}) be the equilibrium income for a lower-class agent who receives wage w_L (resp. w'_L). If $w_L > w'_L$, then $y_{iL} > y'_{iL}$ for all $i \in L$.

Under condition 1, $y_{iL} = w_L h_{iL}$ reaches its maximum on the domain $[0, w_H]$ when $w_L = w_H$. Therefore, $y_{iL} < y_{iH}$ when $w_L < w_H$. This means that only lower-class agents experience envy in equilibrium. So the first-order condition for an upper-class agent is:

$$w_H u'(w_H h_H) = R'(1 - h_H) \quad (5)$$

All upper-class agents face the same first-order condition, which is independent of the labor supply of other agents. This means that equation (5) pins down the optimal labor supply h_H for all $i \in H$.

Substituting $\bar{y}_i = y_H$ into (3), the first-order condition for a lower-class agent given h_H is:

$$w_L [u'(w_L h_L) + \underbrace{(1 + \gamma)\alpha(y_H - w_L h_L)^\gamma}_{\text{Envy Effect}}] = R'(1 - h_L) \quad (6)$$

where $y_H = w_H h_H$, so that h_L is a best response to h_H for all $i \in L$.

We now show that interior solutions to (5) and (6) exist. By assumption, $u'(d)$ and $R'(d)$ go to infinity as $d \rightarrow 0$. In addition, the left-hand (resp. right-hand) sides of (5) and (6) are strictly decreasing (resp. increasing) in h_H and h_L (for a given h_H) respectively, by the concavity of $u(\cdot)$ and $R(\cdot)$ [As such, both second-order conditions for a maximum hold]. This means that the left-hand sides of (5) and (6) decrease monotonically from infinity to some positive real number as h_H and h_L go through the unit interval, respectively. The right-hand sides of (5) and (6) increase monotonically with h_L and h_H from some positive real number to infinity. Therefore, there is a unique (interior) optimum labor supply $h_H \in (0, 1)$ for all upper class agents determined by equation (5) and a unique (interior) best response $h_L \in (0, 1)$ to h_H for all lower-class agents. So the unique Nash equilibrium labor supplies are $h_{iL} = h_L$ and $h_{iH} = h_H$.

We can now address the question of whether envy leads lower-class agents to increase their religious activity in response to an increase in the income of the upper class $y_H = w_H h_H$. Implicitly differentiating (6) with respect to y_H yields:

$$\frac{dh_L}{dy_H} = B_L^{-1} w_L \gamma (1 + \gamma) \alpha (y_H - w_L h_L)^{\gamma-1} > 0 \quad (7)$$

where $B_L = -w_L^2 [u''(w_L h_L) - \alpha \gamma (1 + \gamma) (y_H - w_L h_L)^{\gamma-1}] - R''(1 - h_L)$. The inequality in (7) holds because $\gamma > 0$ and B_L is strictly positive due to the second-order condition. Therefore, when the income of the upper class rises, lower-class agents *decrease* their religious activity. In addition, more intense envy, measured by α , strengthens this

negative association between religious activity among the lower class and upper-class income. Implicitly differentiating (6) with respect to α , we get:

$$\frac{dh_L}{d\alpha} = B_L^{-1}w_L(1 + \gamma)(y_H - w_Lh_L)^\gamma > 0 \quad (8)$$

The intuition is that when upper-class income rises, lower-class agents move to *catch up* to the income of the upper class by working harder. This keeping-up-with-the-Joneses [KUJ] effect is stronger when envy is more intense. As such, lower-class agents devote less time, not more, to religious activity following an increase in income inequality. So it is not at all obvious that envy is sufficient to produce a surge in religious activity in response to a rise in income inequality. Something else is required.

The following Proposition summarizes the results from this section. While it is more convenient to work in terms of labor supply h_i , we shall state all results in terms of religious activity $z_i = 1 - h_i$, given that our aim is to explain religious revivals.

Proposition 1 *In the religion game with envy, there exists a unique Nash equilibrium. In this equilibrium, all lower-class agents choose religious activity $z_L \in (0, 1)$ and all upper-class agents choose religious activity $z_H \in (0, 1)$. In addition:*

$$(i) \quad \frac{dz_L}{dy_H} < 0, \quad (ii) \quad \frac{dz_L}{d\alpha} < 0.$$

3.4 Endogenous Preferences & Religious Revivals

What then is the critical function of religion? Iannaccone (1998) claims that “religion would seem to be the ideal testing ground for models of value change and belief formation” [p. 1491]. We argue that by directing attention from material to spiritual matters, religious activity (i) generates religious *values*, (ii) which place less importance on an agent’s economic status, and (iii) thereby serve as a coping mechanism for relative deprivation. This is consistent with findings by Ellison (1993) that religious belief and practices enhance self-esteem, life satisfaction and a person’s ability to withstand traumatic experiences (see also Smith et al. 2003).

Our conception of the role of religion as part of ‘the psychological immune system’ (see Benabou & Tirole 2002, sec. II) has a long history; Marx’s claim that religion is “the opium of the people” is only its most famous statement. Bainbridge’s (1997) account of the formation of new religious sects among the poorer classes in Gaston county, North Carolina in the 1920s is also consistent with this view. He quotes Liston Pope’s theory that “an otherworldly emphasis in the newer sects affords compensation for poverty and transcendence of poor estate,” adding that “[I]acking any of the symbols of happiness in the secular community, such as fine clothing and jewelry, they rejected those trifles in favor of the divinely conferred status of being sanctified or re-

born in the Holy Spirit" (Bainbridge 1996, p. 34).¹⁷ A similar view is expressed by the Pakistani reformer Ghulam Ahmad Parwez when describing the attitudes of "those who claim monopoly of religion" toward "Westernized, materialistic, and irreligious elements of the society for whom the purpose of life is only to live in comfort and convenience; such people do not accept 'spiritualism,' and they have no concern with God and Prophet Muhammad. The true people of God have their eye on the next world, which is the real home of mankind" (cited in Javaid 1994, p.45). Statements such as "it is comforting to believe in God" and "religion is a crutch" all imply that people are motivated to adopt or reject religious beliefs based upon the material conditions they face.

We model the role of religion as a coping mechanism for relative deprivation in a simple manner by positing that religious activity generates religious values which reduces the degree to which agents care about negative income comparisons. If agents devote all their time to religious activity (e.g. a wandering ascetic), they would not care at all about negative income comparisons. Thus, in place of (3) we shall express the utility (at dates 2 and 3) for an agent who receives wage w as:

$$U(g_i, z_i; \bar{y}_i, w) = u(g_i) + R(z_i) - \alpha(1 - z_i)^\delta (\bar{y}_i - wh_i)_+^{1+\gamma} \quad (9)$$

where $\delta > 0$. The only difference between (9) and (3) is that greater religious activity reduces the weight an agent places on the comparison utility term. The strength of this coping effect is parametrized by δ . Along with comparison utility, this is our only substantial departure from a neoclassical model of labor supply.

3.5 Catching Up or Dropping Out: Coping with Envy

Agents in the lower class can now respond to an increase in upper-class income by working harder and trying to catch up or by 'dropping out' of this status race and devoting more time to religious activity. In this way, they can 'immunize' themselves against negative income comparisons by acquiring religious values which place less importance on economic status. All agents maximize (9) subject to the goods and time budget constraints. We continue with the envy version of the model in which $\bar{y}_i = y_H$. Upper-class agents do not experience envy in equilibrium, so h_H is uniquely determined as before by the first-order condition in (5). All lower-class agents now face the following first-order condition:

$$w_L u'(w_L h) + \underbrace{w_L(1 + \gamma)\alpha h^\delta (y_H - w_L h)^\gamma}_{KUI \text{ Effect}} - \underbrace{\delta \alpha h^{\delta-1} (y_H - w_L h)^{1+\gamma}}_{Coping \text{ Effect}} = R'(1 - h) \quad (10)$$

¹⁷In his classic work, William James (1890/1974) also makes this distinction between material and religious values: "We have lost the power even of imagining what the ancient idealization of poverty could have meant: the liberation from material attachments, the unbribed soul, the manlier indifference, the paying our way by what we are or do and not by what we have. . . it is time for thinking men to protest against so unmanly and irreligious a state of opinion" [p. 356-7].

Denote the left-hand side of (10) by $b(h)$ and the right-hand side as $d(h)$. Both functions $b(h)$ and $d(h)$ are continuous, by the concavity of u and R . As h goes through the unit interval, $b(h)$ goes from infinity to some positive real number and $d(h)$ goes from some positive real number to infinity. By the intermediate value-theorem then, there exists at least one h which satisfies the first-order condition in (10). There may exist more than one such value, however, since we cannot guarantee that $b(h)$ is monotonically decreasing without further assumptions. In addition, since $b(0) > d(0)$ and $b(1) < d(1)$, $b(h)$ crosses $d(h)$ from above at least once. At such a solution to (10), $b'(h) < d'(h)$ or equivalently $b'(h) - d'(h) < 0$, which is the second-order condition for a maximum. Therefore, there exists at least one local (interior) maximizer of the utility function in (9), which satisfies the goods and time budget constraints. The set of local maximizers contains a global maximizer, which we shall denote henceforth by h_L . Therefore, there exists at least one Nash equilibrium of the religion game with envy and coping in which all upper-class agents choose labor supply $h_H \in (0, 1)$ and all lower-class agents choose $h_L \in (0, 1)$.

The comparative static results are the same for every local maximizer, so that we can proceed to operate on condition (10) without identifying a global maximizer. To understand the effect of rising inequality on religiosity, implicitly differentiate (10) with respect to y_H . This yields:

$$\frac{dh_L}{dy_H} = \tilde{B}_L^{-1} [w_L \gamma (1 + \gamma) \alpha h_L^\delta (y_H - w_L h_L)^{\gamma-1} - (1 + \gamma) \delta \alpha h_L^{\delta-1} (y_H - w_L h_L)^\gamma] \quad (11)$$

where:

$$\begin{aligned} \tilde{B}_L = & -w_L^2 u''(w_L h_L) + w_L^2 \gamma (1 + \gamma) \alpha h_L^\delta (y_H - w_L h_L)^{\gamma-1} \\ & - 2w_L (1 + \gamma) \delta \alpha h_L^{\delta-1} (y_H - w_L h_L)^\gamma + \delta (\delta - 1) \alpha h_L^{\delta-2} (y_H - w_L h_L)^{1+\gamma} - R''(1 - h_L) \end{aligned} \quad (12)$$

which is strictly positive due to the second-order condition. Therefore, religious activity among the lower class, $z_L = 1 - h_L$, is strictly *increasing* in income inequality if and only if:

$$w_L \gamma (1 + \gamma) \alpha h_L^\delta (y_H - w_L h_L)^{\gamma-1} - (1 + \gamma) \delta \alpha h_L^{\delta-1} (y_H - w_L h_L)^\gamma < 0 \quad (13)$$

which simplifies to:

$$\frac{y_H - y_L}{y_L} > \frac{\gamma}{\delta} \quad (14)$$

Therefore, a marginal increase in income inequality leads to a rise in religious activity among the lower class if and only if income inequality is sufficiently high. More precisely, the threshold value is expressed in terms of the ratio of the income gap to lower-class income $(y_H - y_L)/y_L$, even though agents care directly about the income

gap $y_H - y_L$ only. Expressing (14) in terms of the income gap, we get $y_H - y_L > \frac{\gamma}{\delta} y_L$. Therefore, a smaller income gap is needed for religiosity among the lower class to be increasing in upper-class income, when lower-class income is low, i.e. when the lower class is poorer. Thus, income inequality and poverty are not separate, but intimately related factors driving religiosity among the lower class.

Notice that the threshold level of inequality does not depend on the intensity of envy α , but rather on the curvature of comparison utility determined by γ and δ . The parameter δ measures the intensity of the coping effect: the rate at which religious activity generates religious values. We shall explore an interpretation of δ as the ‘strictness’ of a religion in sections 5.3-4. The parameter γ measures the intensity of the (counter-veiling) keeping-up-with-the-Joneses effect in which lower-class agents work harder in order to bridge the gap between their income and the income of the upper class. As γ approaches zero from above, any income inequality will suffice for the coping effect to overcome the KIJ effect. In general, the higher is γ , the higher the degree of income inequality needed for religious activity to be increasing in inequality, and vice versa for δ .

To analyze the effect of α on religious activity, implicitly differentiate (10) with respect to α to get:

$$\frac{dh_L}{d\alpha} = \tilde{B}_L^{-1} [w_L(1 + \gamma)h_L^\delta (y_H - w_L h_L)^\gamma - \delta h_L^{\delta-1} (y_H - w_L h_L)^{1+\gamma}] \quad (15)$$

Due to the concavity of $u(\cdot)$ and $R(\cdot)$, $\text{sign}\{dh_L/d\alpha\}$ equals the sign of the term in the square brackets, which equals the sign of the left-hand side of (13). Recall that this determined whether religious activity among the lower class was increasing or decreasing in income inequality. Therefore, when religious activity is increasing in income inequality, $dz_L/d\alpha > 0$, and vice versa. In other words, the intensity of envy α does not effect the direction in which income inequality effects religious activity, it simply increases the magnitude of the association.

We summarize these results in the following Proposition:

Proposition 2 *In the religion game with envy and coping, there exists at least one Nash equilibrium. In every Nash equilibrium, all lower-class agents choose religious activity $z_L \in (0, 1)$ and all upper-class agents choose religious activity $z_H \in (0, 1)$. In addition:*

$$(i) \quad \frac{dz_L}{dy_H} > 0 \quad \text{and} \quad (ii) \quad \frac{dz_L}{d\alpha} > 0$$

if and only if $y_H - y_L > \frac{\gamma}{\delta} y_L$.

In their extensive analysis of worldwide trends in religiosity, Norris & Inglehart (2004) attribute the positive association between religious commitment and income inequality across countries (see figure 3) to a nebulous notion that religion is a response to “existential insecurity.” We have provided here a fully specified explanation of the psychological mechanisms behind this empirical pattern, based upon envy combined

with endogenous religious values. Since envy can inflate or depress religious activity depending on whether income inequality is sufficiently high, our model provides an explanation for the secularization of low-inequality countries such as Japan, Sweden and Denmark, as well as the resilient religiosity found in higher-inequality countries such as the United States and Ireland. In addition, we have shown that income inequality is endogenous. Because a marginal increase in income inequality causes lower-class agents to work harder when income inequality is low, this further compresses the income distribution, relative to the distribution which prevails in the absence of reference-dependent preferences. Conversely, when income inequality is high, a marginal increase in inequality causes lower-class agents to devote less time to work. This makes the income distribution more dispersed. Therefore, reference-dependent preferences lead to a higher variance in income inequality across countries.

4 Unfulfilled Aspirations

We have shown that envy can explain how rising inequality in Muslim societies has led to a surge in religious commitment. However, envy cannot explain the fact that members of Islamic organizations are typically young university graduates from elite faculties, such as engineering, medicine and science (see section 2.2). Why do religious values and participation appeal to the more talented segments of Muslim societies? As suggested by Shalev (2000), Köszegi & Rabin (2006) and Crawford & Meng (2008), we assume in this section that (1) each agent's reference point is their (lagged) expected income denoted by \hat{y}_i , and (2) agents form rational expectations regarding their income. In particular, we assume that agents form income expectations at date 1, prior to realizing their class status c_i . One interpretation of this behavioral model is that agents form *aspirations* while undertaking education, based upon their expected returns from education. The parameter α is now interpreted as the intensity of disappointment or unfulfilled aspirations.¹⁸ In addition, γ no longer measures the intensity of the keeping-up-with-the-Jones [KUJ] effect, but rather the intensity of the keeping-up-with-expectations [KUE] effect in which agents work harder in an attempt to bridge the gap between their actual and expected income.

We show that the envy and unfulfilled aspirations formulations are almost mathematically identical. The only difference is that the equilibrium of the religion game with unfulfilled aspirations depends on agents' expectations of upward mobility. Therefore, the unfulfilled aspirations formulation retains all the results in Proposition 2, while generating additional insights into the contemporary Islamic revival.

¹⁸In the behavioral economics literature, this parameter is usually referred to as the "loss-aversion coefficient" (Kahneman & Tversky 1991).

4.1 Coping with Unfulfilled Aspirations

We solve the entire game, beginning with the choice of labor supply/religious activity in the religion subgame at date 2. We analyze education choice at date 1 in the next section. As the reference point is income expectations \hat{y}_i , labor supply at date 2 depends on expectations formed at date 1, and not on other agents' actions. As such, there is no strategic interaction across agents. Denote the optimal labor supply for agent i , conditional on \hat{y}_i , if she ends up in class c by $h_c(\hat{y}_i) \equiv h_{ic}$. Following Kőszegi & Rabin (2006), we impose rational expectations. That is, we confine our attention to expectations that are consistent with an equilibrium which results from those expectations. Forming the income expectation \hat{y}_i at date 1 involves each agent forming an expectation of what labor supply they would choose if they were to enter the upper class and also what labor supply they would choose if they were to enter the lower class. In other words, each agent forms the pair $(\hat{h}_{iL}, \hat{h}_{iH})$ at date 1, where \hat{h}_{ic} is the labor supply i expects to choose if she ends up in class c . Expected income at date 1 for each agent $i \in N$ can be written as $\hat{y}_i = \mu_i w_H \hat{h}_{iH} + (1 - \mu_i) w_L \hat{h}_{iL}$, where μ_i is the date 1 probability that agent i ends up in the upper class. Recall that μ_i depends on θ and e_i , where e_i is treated for the time being as fixed. We refer to μ_i as an agent's *expectation of upward mobility*. Recall that the only source of uncertainty when expectations are formed at date 1 is whether c equals L or H ; in particular, wages are known. Rational expectations then requires that $\hat{h}_{ic} = h_c(\hat{y}_i)$ for $c \in \{L, H\}$.

We rely upon Rabin and Kőszegi's (2006) solution concept of *personal equilibrium* to restrict expectations. In order to define the concept for our purpose, write the utility function as $U(h_i; \hat{y}_i, w_{c_i})$.¹⁹

DEFINITION 1. A *personal equilibrium* [PE] of the religion game consists of (i) a date 2 strategy profile $\mathbf{h}^* \equiv (h_{ic})_{i \in N}$ such that $U(h_{ic}; \hat{y}_i, w_{c_i}) \geq U(h; \hat{y}_i, w_{c_i})$ for all $h \in [0, 1]$ and all $i \in N$, and (ii) rational expectations at date 1, $\hat{h}_{iH} = h_H(\hat{y}_i)$ and $\hat{h}_{iL} = h_L(\hat{y}_i)$ for all $i \in N$.

Let $y_{ic} \equiv w_c h_{ic}$ for $c \in \{L, H\}$. In any PE, the 'aspiration gap' for an upper-class agent is $\hat{y}_i - y_{iH} = \mu_i \hat{y}_{iH} + (1 - \mu_i) \hat{y}_{iL} - y_{iH} = -(1 - \mu_i)(y_{iH} - y_{iL})$. As such, an agent who ends up in the upper class does not experience unfulfilled aspirations in equilibrium, so that their comparison utility equals zero. This means that the optimal labor supply, $h_{iH} = h_H$, is again the same for all agents who end up in the upper-class and is uniquely determined as before by the first-order condition in (5).

Since income expectations are formed at date 1, each agent who ends up in the lower class maximizes (9), subject to the goods and time constraints, treating their reference point $\bar{y}_i = \hat{y}_i$ as fixed. The resulting first-order condition for a representative agent $i \in L$ is:

¹⁹We can rewrite the utility function in (9) by substituting the goods constraint in (4) for g_i and the time constraint in (4) for z_i .

$$w_L u'(w_L h) + w_L (1 + \gamma) \alpha h^\delta (\hat{y}_i - w_L h)^\gamma - \delta \alpha h^{\delta-1} (\hat{y}_i - w_L h)^{1+\gamma} = R'(1 - h) \quad (16)$$

The argument applied in section 4.1 suffices to establish that for each \hat{y}_i there exists at least one solution to (16) which satisfies the second-order condition for a maximum. Among the local minimizers, there exists an *interior* global maximizer of (9) in the unfulfilled aspirations formulation. Denote this best response by $h_L(\hat{y}_i) \equiv h_{iL}$. This applies for every agent who ends up in the lower class. We now impose rational expectations, as in part (ii) of the PE definition. This requires that, for all $i \in N$, $\hat{h}_{iH} = h_H(\hat{y}_i)$ and $\hat{h}_{iL} = h_L(\hat{y}_i)$, or expanding \hat{y}_i :

$$\begin{aligned} \hat{h}_{iH} &= h_H(\mu_i w_H \hat{h}_{iH} + (1 - \mu_i) w_L \hat{h}_{iL}) \\ \hat{h}_{iL} &= h_L(\mu_i w_H \hat{h}_{iH} + (1 - \mu_i) w_L \hat{h}_{iL}) \end{aligned} \quad (17)$$

where the probability of entering the upper class μ_i is endogenously determined by education choice at date 1, so agents take μ_i as given when choosing labor supply at date 2. Since $h_{iH} = h_H$ for all $i \in H$ and h_H is fully determined by (5), the first line in (17) can be written as $\hat{h}_{iH} = h_H$. With \hat{h}_{iH} pinned down, we can express the right-hand side of the second line in (17) as $h_L(\hat{h}_{iL})$. Recall that for each \hat{y}_i , $h_L(\hat{y}_i)$ exists and lies in the open interval $(0, 1)$. Therefore the right-hand side of (17) is greater than zero when $\hat{h}_{iL} = 0$ and less than one when $\hat{h}_{iL} = 1$. From (16), $h_L(\hat{y}_i)$ is a continuous function of \hat{y}_i . It immediately follows that for each $\mu_i \in [0, 1]$, there exists at least one pair of optimal class-contingent labor supplies (h_H, h_{iL}) which satisfies the rational expectations condition (17). This applies for all $i \in N$. Let $\mathbf{m} \equiv (\mu_j)_{j \in N}$ be the profile of mobility expectations. Therefore, for each \mathbf{m} , there exists at least one PE of the religion game with unfulfilled aspirations and coping. We shall at times denote the optimal labor supply for lower-class agents by $h_{iL}(\mu_i)$ to emphasize that their equilibrium labor supply is a function of mobility expectations μ_i .

Another way of characterizing the solution for lower-class agents, which will be useful for the comparative static analysis, is to substitute the equilibrium 'aspiration gap' into the first-order condition. In a PE, the 'aspiration gap' for a lower-class agent is $\hat{y}_i - y_{iL} = \mu_i y_H + (1 - \mu_i) y_{iL} - y_{iL} = \mu_i (y_H - y_{iL}) > 0$. Notice that this is the same as in the envy case, except that the coefficient μ_i amplifies the income gap. Substituting this 'aspiration gap' into the first-order condition (16) yields:

$$w_L u'(w_L h_{iL}) + \underbrace{w_L (1 + \gamma) \alpha h_{iL}^\delta \mu_i^\gamma (y_H - w_L h_{iL})^\gamma}_{\text{KUE Effect}} - \underbrace{\delta \alpha h_{iL}^{\delta-1} \mu_i^{1+\gamma} (y_H - w_L h_{iL})^{1+\gamma}}_{\text{Coping Effect}} = R'(1 - h_{iL}) \quad (18)$$

Since every PE labor supply h_{iL} satisfies (18) for each $i \in L$, as well as the second-order condition for a maximum, we can operate on equation (18) to derive the comparative

static results, which will be the same in every PE. Again, we simply treat \mathbf{m} as given in the following analysis. First, let us analyze how income inequality affects religiosity for a representative lower-class agent i in the religion model with unfulfilled aspirations. Implicitly differentiating (18) with respect to y_H , we find that $dz_{iL}/dy_H > 0$ if and only if:

$$w_L \gamma (1 + \gamma) \alpha h_{iL}^\delta \mu_i^\gamma (y_H - w_L h_{iL})^{\gamma-1} - (1 + \gamma) \delta \alpha h_{iL}^{\delta-1} \mu_i^{1+\gamma} (y_H - w_L h_{iL})^\gamma < 0 \quad (19)$$

which simplifies to:

$$\frac{y_H - y_{iL}}{y_{iL}} > \frac{\gamma}{\delta \mu_i} \quad (20)$$

Therefore, the unfulfilled aspirations formulation adds a new insight to the main result in Proposition 2. Again, the income gap $y_H - y_{iL}$ needs to be sufficiently large relative to the product of γ/δ and income y_{iL} for the religious activity of a lower-class agent i to be increasing in income inequality. Now, however, a lower level of income inequality triggers this coping response for agents who expected at date 1 to be likely to enter the upper class $c_i = H$, but instead ended up in the lower class c_i . As $\mu_i \rightarrow 0$ from above, the threshold level of inequality goes to infinity, so that agents with very low expectations of upward mobility do not increase their religious activity in response to an increase in income inequality.

We now explore the direct relationship between expectations of upward mobility and religious activity. By implicitly differentiating (18) with respect to μ_i , we find that $dz_{iL}/d\mu_i > 0$ if and only if:

$$w_L \gamma (1 + \gamma) \alpha h_{iL}^\delta \mu_i^{\gamma-1} (y_H - w_L h_{iL})^\gamma - (1 + \gamma) \delta \alpha h_{iL}^{\delta-1} \mu_i^\gamma (y_H - w_L h_{iL})^{1+\gamma} < 0 \quad (21)$$

which as with (19) simplifies to $\frac{y_H - y_{iL}}{y_{iL}} > \frac{\gamma}{\delta \mu_i}$. So an agent's response to unfulfilled expectations of mobility mirrors their response to income inequality. Higher social mobility may actually lead to greater religiosity among the lower class. Lower-class agents who had higher expectations of upward mobility μ_i , devote more time to religious activity only when income inequality is sufficiently high. More precisely, income inequality must be above the same threshold $\gamma/(\delta \mu_i)$ that determines whether a rise in income inequality causes lower-class agents to increase their religious activity. Otherwise, they would attempt to bridge the gap between their actual and expected income by working harder and spending less time on religious activity. Therefore, low social mobility, income inequality and poverty among the lower class are contributing causes of a religious revival, which cannot be viewed in isolation.

In fact we can say more than this. Recall that $\mu_i = \theta_i e_i$, which is the product of an agent's educational attainment e_i and the return to education parameter θ . By the above reasoning, we can show that $dz_{iL}/de_i > 0$ and $dz_{iL}/d\theta > 0$ if and only if

$\frac{y_H - y_{iL}}{y_{iL}} > \frac{\gamma}{\delta\mu_i}$. The fact that religiosity is increasing in educational attainment in the unfulfilled aspirations formulation, when income inequality is high, thus explains why university graduates from elite faculties have been the most active agents of the contemporary Islamic revival. It is these individuals who had the highest aspirations/expectations of upward mobility and were most disappointed when stuck in the lower class. Since religious activity is also increasing in θ when income inequality is sufficiently high, both high expected returns to (higher) education and the rise in income inequality in Muslim societies since the 1970s are a critical part of this explanation (see section 5.2 for a full discussion).

Implicitly differentiating (18) with respect to α it is straightforward to show that if religious activity is increasing in income inequality and expectations of upward mobility, then $dz_{iL}/d\alpha > 0$, and vice versa. In other words, the intensity of disappointment α increases the magnitude, but not the sign, of the association between inequality/mobility expectations and religiosity among the lower class.

These results are summarized in the following Proposition:

Proposition 3 *Consider the religion game with unfulfilled aspirations, coping and fixed education choices. For every $\mathbf{m} \equiv (\mu_j)_{j \in N}$, there exists at least one personal equilibrium [PE]. In every PE, each lower-class agent chooses religious activity $z_{iL}(\mu_i) \in (0, 1)$, all upper-class agents choose religious activity $z_H \in (0, 1)$, and expectations are self-fulfilling, i.e. $\hat{z}_{iL} = z_{iL}$ and $\hat{z}_{iH} = z_H$ for all $i \in N$. In addition, the following results hold in every PE:*

$$(i) \frac{dz_{iL}}{dy_H} > 0 \quad (ii) \frac{dz_{iL}}{de_i} > 0 \quad (iii) \frac{dz_{iL}}{d\theta} > 0 \quad (iv) \frac{dz_{iL}}{d\alpha} > 0$$

if and only if $y_H - y_{iL} > \frac{\gamma}{\delta\mu_i} y_{iL}$.

4.2 Education & Aspirations

In this section, we complete the model by characterizing the equilibria of the entire game, focusing on the richer unfulfilled aspirations formulation. At date 1, agents choose their investment in education $e_i \in [0, 1]$. Optimal education choice determines the equilibrium profile of mobility expectations which we denote by $\mathbf{m}^* \equiv (\mu_j^*)_{j \in N} = (\theta e_j^*)_{j \in N}$. We have already analyzed the religion game beginning at date 2: for every \mathbf{m} there may be multiple PE of this subgame. We do not need to distinguish between the PE of the religion subgame, since our comparative static results will be the same in every equilibrium.²⁰ To define a personal equilibrium of the entire game, denote PE labor supply at date 2 for each $i \in N$, conditional on education choice e_i at date 1, by the pair $\sigma(e_i) = (h_{iL}(e_i), h_H)$.²¹ We can now write agent i 's date-1 expected payoff for the entire game as $\tilde{U}(e_i, \sigma(e_i); \hat{y}_i(e_i))$.

²⁰As such, we can introduce all our results without introducing additional solution concepts such as Kőszegi and Rabin's (2006) *preferred personal equilibrium*.

²¹The first (resp. second) element is i 's labor supply if she ends up in class L (resp. H). Recall that h_H is pinned down by (5) and as such does not depend on e_i .

DEFINITION 2. A personal equilibrium of the entire game consists of: (i) for each $\mathbf{m} \equiv (\theta e_i)_{i \in N}$, a PE of the religion subgame characterized by $\sigma(e_i) = (h_{iL}(e_i), h_H)$, and (ii) optimal education choices $(e_i^*)_{i \in N}$ at date 1, such that $\tilde{U}(e_i^*, \sigma(e_i^*); \hat{y}_i(e_i^*)) \geq \tilde{U}(e, \sigma(e); \hat{y}_i(e))$ for all $e \in [0, 1]$ and $i \in N$.

To begin with, fix an education choice e_i and a particular PE conditional on e_i , in which $h_i = h_{iL}(e_i)$ and $h_i = h_H$ for all $i \in N$. We can then develop expressions for agents' utility at date 2 and 3, which are their equilibrium continuation payoffs following education choice at date 1. The payoffs for all agents who end up in the upper class $c_i = H$ and for a representative agent i ending up in the lower class $c_i = L$ are respectively:

$$\begin{aligned} V_H &= u(w_H h_H) + R(1 - h_H) \\ V_{iL}(e_i) &= u(w_L h_{iL}) + R(1 - h_{iL}) - \alpha h_{iL}^\delta (\theta e_i)^{1+\gamma} (y_H - w_L h_{iL})^{1+\gamma} \end{aligned} \quad (22)$$

We can then write agent i 's expected utility at date 1, when choosing e_i as:

$$\tilde{U}(e_i, \sigma(e_i); \hat{y}_i(e_i)) = \theta e_i V_H + (1 - \theta e_i) V_{iL}(e_i) - k(e_i, a_i) \quad (23)$$

where $k(e_i, a_i)$ is the cost of education, which is strictly decreasing in an agent's ability a_i . Notice that although higher education increases the probability that an agent enters the upper class, it also raises expectations and thereby increases disappointment should the agent fail to do so. This means that agents may lower their investment in education in an attempt to mitigate their disappointment should they fail to achieve upward mobility. We call this the keeping-down-expectations [KDE] effect on education choice, and we are unaware of any prior theoretical work on this effect. Utilizing the envelope theorem when differentiating V_{iL} , the first-order condition for education choice is:

$$\theta(V_H - V_{iL}(e)) + \underbrace{(1 - \theta e) \frac{\partial V_{iL}(e_i)}{\partial e_i}}_{\text{KDE effect}} \Big|_{e_i=e} = \frac{\partial k(e_i, a_i)}{\partial e_i} \Big|_{e_i=e} \quad (24)$$

The first term in (24) is a standard incentive effect. The second term is the KDE effect, which is negative and thus depresses education choice, relative to the benchmark in which agents do not have reference-dependent preferences. Calculating $\partial V_{iL}(e_i) / \partial e_i |_{e_i=e}$ from (22) and substituting into (24), we get:

$$\theta(V_H - V_{iL}(e)) - (1 + \gamma)(1 - \theta e) \alpha h_{iL}^\delta \theta^{1+\gamma} e^\gamma (y_H - w_L h_{iL})^{1+\gamma} = \frac{\partial k(e_i, a_i)}{\partial e_i} \Big|_{e_i=e} \quad (25)$$

By the assumptions on k , the right-hand side of (25) increases monotonically from zero to infinity as e_i goes through the unit interval. When $e_i = 0$, the left-hand side of (25)

equals $V_H - V_{iL}(0) > 0$. Since V_H and $V_{iL}(e_i)$ are bounded, the left-hand side equals some finite real number when $e_i = 1$. Both sides of (25) are continuous functions of e_i . By the intermediate-value theorem then, the curve represented by the left-hand side crosses $\partial k(e_i, a_i) / \partial e_i$ from above at least once. It immediately follows that there exists at least one solution to (25), which satisfies the second-order condition for a maximum. The set of local maximizers contains the global maximum which we denote by e_i^* . This applies for all $i \in N$.

By Proposition 3, there exists, for each $\mathbf{m} \equiv (\theta e_i)_{i \in N}$, at least one PE of the religion subgame. For each \mathbf{m} , fix a PE at date 2. We have shown here that there exists a unique profile of optimal education choices at date 1, such that $\mathbf{m}^* \equiv (\theta e_i^*)_{i \in N}$ in equilibrium. Therefore, there exists at least one PE of the entire game:

Proposition 4 *There exists at least one personal equilibrium [PE] of the entire game with unfulfilled aspirations and coping. In every PE, (i) for each profile $\mathbf{m} \equiv (\theta e_i)_{i \in N}$ chosen at date 1, religious activity at date 2 constitutes a PE of the religion subgame as characterized by Proposition 3, (ii) education choice at date 1 is e_i^* for each $i \in N$, such that in equilibrium $\mathbf{m} \equiv (\theta e_i^*)_{i \in N}$.*

In addition, we can say something about the comparative statics of education choice. Since $\partial^2 k(e_i, a_i) / \partial e_i \partial a_i < 0$ for all e_i , an agent's equilibrium educational attainment is increasing in her ability. Therefore, it is the most talented members of society who invest more in education and experience greater disappointment when failing to achieve upward mobility. However, due to the KDE effect, we cannot guarantee that educational attainment is increasing in the return to education θ . While a higher θ implies a higher payoff when an agent manages to achieve upward mobility, it also implies greater disappointment should they fail to do so. A further exploration of the KDE effect is beyond the scope of the present analysis, but is worthy of treatment in future research.

4.3 Growth Reversals & Overall Religiosity

Thus far, we have focussed on religiosity among the lower class. In this section, we characterize the conditions under which a reversal in economic growth leads to a rise in *overall* religiosity, across classes, in the unfulfilled aspirations formulation. We shall now assume that the return to education is stochastic. Let the return to education be the random variable Θ and let θ be its realization. Define $\bar{\theta} \equiv E[\Theta]$ as the *expected* return to education at date 1 and $\rho \equiv \theta - \bar{\theta}$ as the gap between the actual and expected return. As the return to education enters the utility function via $\mu_i = \bar{\theta} e_i$ as a point estimate, all our previous results follow through, with θ replaced by $\bar{\theta}$. The realized return to education θ is related to economic growth in the following way: for a given education profile, θ determines the size of the upper class. In many Muslim societies, a reversal in economic growth during the 1970s and especially the 1980s manifested itself most prominently in a decline in the proportion of the workforce employed in

highly-paid jobs in the civil service and private sector. To fit with our discussion of these events in sections 5.1-2, we refer to a growth disappointment, i.e. $\rho < 0$, as a *growth reversal*. So while raised aspirations can lead to greater religiosity among those who fail to achieve upward mobility, a growth reversal leads to a larger proportion of agents failing to do so.

Let \bar{z} be (*ex ante*) average religious activity across all agents. This can be expressed as follows:

$$\bar{z} = (\bar{\theta} + \rho) \int_0^1 e^*(i) z_H di + \int_0^1 (1 - (\bar{\theta} + \rho) e^*(i)) z_{iL} di \quad (26)$$

where z_H , z_{iL} and $e^*(i) = e_i^*$ are the equilibrium values characterized in Propositions 3 and 4. Since for every $i \in N$, z_H , z_{iL} and e_i^* depend on $\bar{\theta}$ only and not ρ , we have:

$$\frac{d\bar{z}}{d\rho} = \int_0^1 e^*(i) (z_H - z_{iL}) di \quad (27)$$

Therefore, $d\bar{z}/d\rho < 0$, i.e. a growth reversal causes an increase in religious activity, if $z_{iL} > z_H$ for all $i \in N$. While recalling that $z_{iL} = 1 - h_{iL}$, let us rewrite the first-order condition (18) for each $i \in L$ in a PE as:

$$w_L u'(w_L h_{iL}) + d(h_{iL}) = R'(1 - h_{iL}) \quad (28)$$

where:

$$d(h_{iL}) = \underbrace{w_L (1 + \gamma) \alpha h_{iL}^\delta \mu_i^\gamma (y_H - w_L h_{iL})^\gamma}_{KUE\ Effect} - \underbrace{\delta \alpha h_{iL}^{\delta-1} \mu_i^{1+\gamma} (y_H - w_L h_{iL})^{1+\gamma}}_{Coping\ Effect} \quad (29)$$

Recall that the first-order condition for each $i \in H$ in a PE is:

$$w_H u'(w_H h_H) = R'(1 - h_H) \quad (30)$$

A well-documented regularity in labor economics is that large permanent differences in the real wage have little effect on household labor supply, across households, across countries and across time. Labor economists interpret this as evidence that income and substitution effects on labor supply choice cancel each other out (see Kimball & Shapiro 2008). We shall assume here that the income and substitution effects on labor supply offset each other, in the following way, in order to isolate the effect of unfulfilled aspirations on overall religiosity.

CONDITION 2. The solution, \tilde{h} , to the equation:

$$w u'(w \tilde{h}) = R'(1 - \tilde{h}) \quad (31)$$

is the same for all w .

Comparing (28) and (30), condition 2 implies that $h_{iL} > h_H$ if and only if $d(h_{iL}) > 0$. This means that $z_{iL} > z_H$ if and only if:

$$w_L(1 + \gamma)\alpha h_{iL}\mu_i^\gamma (y_H - w_L h_{iL})^\gamma - \alpha\mu_i^{1+\gamma}(y_H - w_L h_{iL})^{1+\gamma} < 0 \quad (32)$$

which implies that:

$$\frac{y_H - y_{iL}}{y_{iL}} > \frac{1 + \gamma}{\delta\mu_i} \quad (33)$$

This is identical to the now familiar condition which determines the sign of the relationship between inequality/mobility expectations and religiosity, except that $1 + \gamma$ features on the right-hand side, not γ . In other words, a growth reversal leads to greater overall religiosity \bar{z} if income inequality is sufficiently high relative to $(1 + \gamma)/(\delta\mu_i)$ for all $i \in N$. At the same time, this condition determines whether a given lower-class agent with mobility aspirations μ_i is more religious than upper-class agents, i.e. $z_{iL} > z_H$. This is not the case when income inequality is sufficiently low, or alternatively mobility expectations are low, since agents would then work harder to bridge the gap between their expected income and their actual income, rather than attempting to cope with unfulfilled aspirations by immersing themselves in religious activity.

Proposition 5 *Suppose condition 2 holds. In every PE of the game with unfulfilled aspirations and coping:*

- (i) *for all $i \in N$, $z_{iL} > z_H$ if and only if $y_H - y_{iL} > \frac{1+\gamma}{\delta\mu_i} y_{iL}$*
- (ii) *$\frac{d\bar{z}}{d\rho} < 0$ if $y_H - y_{iL} > \frac{1+\gamma}{\delta\mu_i} y_{iL}$ for all $i \in N$.*

Thus, with only two substantial departures from a neoclassical model of labor supply, we have demonstrated that growth reversals, rising inequality, poverty and unfulfilled mobility aspirations are all intimately related causes of a religious revival and that none of these factors can be viewed in isolation.

5 The Roots of Islamic Revival

In this section, we discuss in detail how our model of religious revivals can explain the economic origins of the Islamic revival. We have developed a model in which growth reversals, rising inequality, poverty and unfulfilled mobility aspirations combine to produce a religious revival. Now we shall introduce the relevant economic and social history to show how these factors have led to the contemporary Islamic revival. We shall also elaborate upon the psychological and social mechanisms through which inequality and unfulfilled aspirations might have led to a resurgence in Islam and address other outstanding issues.

5.1 Growth, Inequality & the State

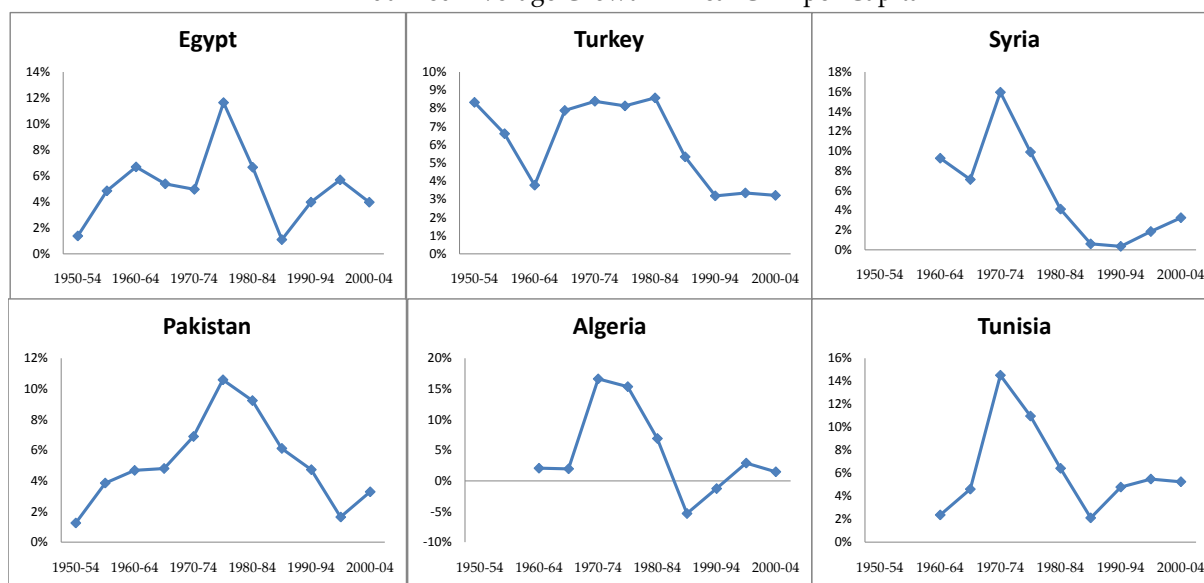
In the years following World War II, many Muslim nations, including Turkey, Egypt, Iran, Pakistan, Tunisia and Jordan, embarked upon modernization programs which involved developing a vast centralized bureaucracy and modern army, state-led import substituting industrialization [ISI] and a massive expansion in state education. This led to the emergence of a new urban middle class, characterized by a formal educational degree and white-collar employment (Wickham 2002, p. 36). For example, Amin (1995, p. 131-4) estimates that the Egyptian middle class grew from 19% of the population in 1955 to 45% in 1990, half to three quarters of which could be classified as lower-middle class. Owen and Pamuk (1998, p. 100) claim that as much as half of the non-agricultural workforce in Egypt was employed by the state as civil servants, workers and managers. ISI produced impressive rates of economic growth in the 1950s and 1960s by mobilizing large amounts of capital and labor (Owen & Pamuk 1998). However, by the middle of the 1970s, the combined problems of ISI and the state sector had become apparent in the declining competitiveness of firms.

State intervention led to a misallocation of resources between agriculture and industry through overvalued exchange rates and various subsidies (Owen & Pamuk 1998, p. 100). Resources were diverted from agriculture to the emerging urban industrialists and the rapidly expanding bureaucracy which had been charged with planning the new economic structure. The result was inflation in the cities, an unequal distribution of income (Owen & Pamuk 1998, p. 95), and rapid urbanization. The populations of Cairo, Baghdad and Casablanca more than tripled between the late 1930s and 1960; the population of Amman grew from 30,000 in 1948 to a quarter of a million by 1960 with the influx of Palestinian refugees (Hourani 2005). The first reaction of many of these countries to the oil price rises in 1973 was to borrow in international money markets flooded with savings from oil-producing nations, in order to sustain their ISI programs. However, the period ended in a dramatic *growth reversal*, as sharply higher interest rates due to the tightening of US monetary policy in 1979 raised the debt burden and region-wide recession followed the collapse in oil prices in 1980. This growth reversal is depicted in Figure 4 for Egypt, Turkey, Pakistan, Syria, Algeria and Tunisia.

GDP growth rates fell dramatically in most Muslim societies during the 1980s (Pissarides & Veganzones-Varoudakis 2005, p. 5). Every country in Figure 4, except for Egypt, begins its decline in real GDP per capita in the early 1980s; Egypt begins its growth decline even earlier in the late 1970s. Average GDP per capita growth across Middle East and North African [MENA] countries was a mere 0.1 percent annually during the 1980s and 1.5 percent annually during the 1990s (Nabli 2002, p. 3). Real wages declined during the 1980s; in countries such as Egypt real manufacturing wages had reverted to 1970 levels by 1992 (Berberoglu 2000, p. 195). There was also a remarkable decline in total factor productivity in MENA countries beginning in the 1970s, and in this respect MENA countries compare poorly even with sub-Saharan Africa (Pissarides & Veganzones-Varoudakis 2005, p. 5-6). Growth in the number of high-prestige jobs in the civil service and military began to stagnate in the 1980s, as did private sector employment growth in the cities (Dasgupta et al. 2002, Cooper 1982,

Figure 4. Growth Reversal in Muslim Nations

Annualized Average Growth in Real GDP per Capita



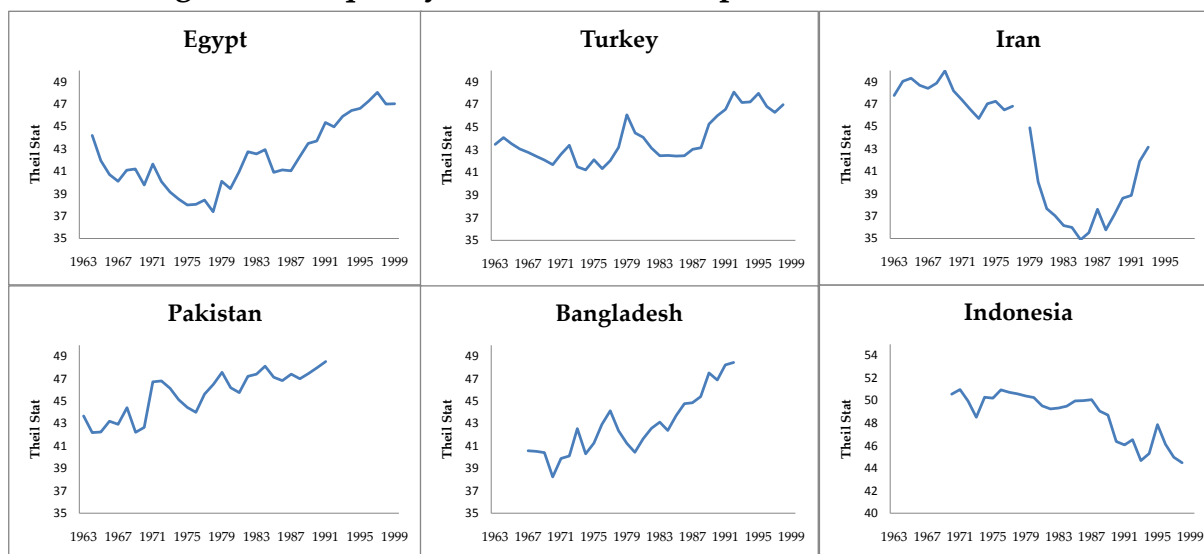
Data Source: Penn World Table (Heston et al. 2006).

Amin 1995). Labor demand declined in Gulf states which had previously soaked up surplus labor from net oil importers such as Egypt. Unemployment in MENA countries rose to perhaps the highest level of any region in the world by 2001, averaging 20 percent of the labor force outside the oil-producing economies of the Gulf, with the youth unemployment rate typically double the national average (Nabli 2002, p. 5).

In Egypt, for example, the Nasser regime had provided free higher education and guaranteed state employment for all university graduates. Such government measures and the economic growth that ensued from state-led ISI raised expectations in the 1950s and 1960s of upward social mobility based upon higher education. Beginning in the mid-1970s, however, the Egyptian government gradually lengthened the time between graduation and employment to ten years: “As the prospects of immediate state employment waned, more and more graduates resorted to manual work in the informal sector (for example as mechanics, carpet installers, housepainters, plumbers, and taxi drivers) or remained unemployed” (Wickham 2002, p. 37). When Hosni Mubarak became Egyptian president in October 1981, he scaled back the policy of guaranteed state employment for those with university degrees. The official rate of unemployment nearly doubled between 1976 and 1986 from 7.7 percent to 14.7 percent, and this was concentrated among youth with secondary/tertiary education and no work experience (Owen & Pamuk 1998). Unemployment estimates made by US embassy officials in 1991 were nearly double the official government estimates (Wickham 2002, p. 43). Thus, raised aspirations for upward mobility were dashed by the growth reversal in Muslim countries.

In combination with unfulfilled aspirations, an increase in income inequality in Muslim societies is critical to our explanation of the Islamic revival. Income inequality was increasing even prior to the economic crisis in the 1980s, due to trade liberalization,

Figure 5. Inequality Trends in Most Populous Muslim Nations



Data Source: University of Texas Inequality Project. Theil T-Statistic for six most populous predominantly Muslim nations.

increased foreign investment and the oil price boom after 1973. Following the implementation of the *infitah* (open-door) policy by Sadat in the 1970s, El Guindi (1981) claims that “[a] new form of inequality has emerged- wealth for the entrepreneur, unemployment for the college educated” [p. 481]. Windfall oil-related revenues after 1973, however, enabled governments to temporarily mitigate the rise in income inequality by sustaining consumer subsidies and public sector employment. For example, the state sector in Egypt provided 70.7 percent of all new jobs within Egypt between 1977 and 1984. This changed amidst foreign exchange crises and defaults on foreign debt in many MENA countries, which was triggered by the collapse in oil prices in 1980. The IMF and World Bank used their increased leverage at this time to promote structural adjustment programs. The two major changes that were called for and implemented to different degrees were the removal of various subsidies and the rationalization of the private sector. In many countries, state subsidies on basic goods such as rice, sugar, cooking oil, fuel and transportation were significantly reduced or removed altogether (Bayat 2002, p. 2). The consequent rise in inflation, which led to further inequality, provoked urban riots in Egypt in 1977 and in Morocco, Tunisia, Lebanon, Algeria and Jordan in the 1980s (Bayat 2002, p. 2).

To establish that these processes led to a rise in income inequality from the 1970s, we examine data from the University of Texas Inequality Project for the six most populous predominantly Muslim countries- Egypt, Turkey, Iran, Pakistan, Bangladesh and Indonesia. Figure 3 plots the evolution of the Theil T-statistic for each nation between 1963 and 1999. The two countries which have featured prominently in Islamic revival accounts- Egypt and Turkey- both exhibit a marked increase in income inequality beginning in the 1970s, with further increases in the 1980s and 1990s.²² A consistent

²²Owen & Pamuk (1998, p. 124, 146) provide independent evidence that intra-urban income inequality in Egypt and Turkey grew during the 1980s.

increase in income inequality is also observed in Pakistan and Bangladesh, but not in Indonesia and Iran. Cameron (2002) shows that urban consumption inequality in Indonesia increased following the manufacturing boom in the early to mid 1980s up until the Asian Financial Crisis in 1997-8, and that the decline in overall inequality reflects a sharp reduction in rural poverty. The break in the series for Iran comes during the Islamic revolution in 1978-9, after which income inequality declined markedly. This might explain why there was no broad-based Islamic social movement in Iran, as there was in Egypt, despite the Islamic political revolution (see Bayat 2007). Interestingly, Looney (1982, p. 248-9) cites a whole host of studies which document high and increasing income and consumption inequality prior to the Iranian revolution.

5.2 Why the Educated Middle Class?

We have traced the origins of the contemporary Islamic revival to a reversal in economic growth and rising inequality in Muslim societies. We have, however, only briefly touched upon why the educated middle class have been the most active participants in the Islamic revival (see section 2.2). Amin (1995) claims, with regard to Egypt, that “a high proportion of those belonging to the lower middle class have been suffering most of the last two decades from a growing sense of frustration, dissatisfaction with their lives, loss of self respect and a grudge against the society at large” [p. 134-5]. In this section, we set out our argument for why members of the educated middle class were the most sensitive to rising inequality and hardest hit by unfulfilled aspirations.

For parsimony, we have analyzed a model with only two classes, and it was natural to refer to these as the upper class and lower class, respectively. These two classes could simply be reinterpreted as the upper class and the middle class.²³ Though the interaction between the upper class and middle class is at the heart of our explanation for the Islamic revival, our model also explains why the poorer classes were not more active participants in the movement. Lacking the basic cultural and financial resources required to take up higher education, members of the poorer classes had very low aspirations for upward mobility. Thus, according to Proposition 3, they are not expected to use religion as a means of coping with relative deprivation. Amin (1995) puts it this way:

It is striking how rare it is to find examples of religious fanaticism among the higher or the very lowest social strata of the Egyptian population. While members of the higher classes are obviously exempt from the frustration brought about by feelings of inferiority, members of the lowest social strata are saved from this frustration by their realization of the near impossibility of changing their relative social status. [p. 136]

For ease of exposition, we focus mainly on the case of Egypt in this section, and draw heavily upon the work of Wickham (2002) on the origins of Islamic mobilization in that

²³Clearly, the theoretical framework we have developed could be extended to analyze interactions between three or more classes, but we leave this to future work.

country. Egypt is an important case, because the formation of the Muslim Brotherhood in Egypt and its subsequent offshoots throughout the Muslim world (e.g. Hamas, Al-Nahda, Al-Eslah), initiated the region-wide Islamic movement. Of course, the prominent role of the educated middle class in contemporary Islamic movements has also been documented in Jordan (Azem 1997), Tunisia (Hoffman 1995), Yemen (Clark 2004) and elsewhere in the Middle East (Ayubi 1991).

5.2.1 Rising Inequality & Middle-Class Impoverishment

The educated middle class, in particular the lower-middle class, employed in the public sector in MENA countries were worst affected by rising inequality during the 1970s oil-price boom (El Guindi 1981). Private-sector professionals benefitted from the creation of lucrative jobs in the petroleum, banking and construction industries, even in net oil importing countries such as Egypt and Turkey. As unskilled rural laborers left countries such as Egypt to take up construction work in the Gulf states, real wages in agriculture soared- tripling in Egypt between 1973 and 1984 (Wickham 2002, p. 40). In contrast, real wages of white-collar workers in the Egyptian public sector fell by 8 percent between 1974 and 1984, and those in government administration fell by 23 percent (Wickham 2002, p. 40-1).

The relative position of the Egyptian middle class deteriorated further during the economic crisis of the 1980s. Instead of abandoning its policy of guaranteed state employment for university graduates, the Egyptian government lowered wages as much as possible to discourage graduates from applying for the guaranteed employment scheme. By 1987, the salaries of government employees had fallen to 55 percent of their level in 1973, forcing employees to take second and even third jobs (Wickham 2002, p. 47). For example, it became increasingly common for educated civil servants to work as taxi drivers during the evenings. Thus, many educated and once comfortable members of the middle class slid into the ranks of the urban poor (Bayat 2002, p. 2). Middle-class men often had to wait until their thirties to marry (Ayubi 1991). With regard to the guaranteed state-employment scheme, Wickham (2002) cites evidence that “the applicant pool became increasingly rural, female and/or lower-middle class, reflecting these groups’ more limited alternatives. At the other end of the spectrum, urban upper- and upper-middle class graduates expressed no interest in the guaranteed employment scheme” [p. 47]. As such, she claims that Egypt’s ‘new middle class,’ created in the 1950s and 1960s, “splintered into different tiers”:

Among recent graduates, stratification followed class lines, with the prospects of lower-middle-class graduates limited to low-paid government jobs, entry sales positions, and manual work in the informal sector, whereas the offspring of the country’s socioeconomic elite were eligible for high-paid professional, technical and administrative jobs in the private sector. [p. 52]

Wickham (2002, p. 52-3) estimates that entry-level positions for graduates in joint ventures and foreign firms paid a staggering twelve times more than those in local government administration, and around four times more than those in elite government departments such as the Ministries of Justice, Finance and Petroleum. As such,

we argue that the falling relative income and impoverishment of the middle class in absolute terms, especially the lower-middle class who relied upon state employment, jointly contributed to a surge in religiosity. This also explains why members of Islamic organizations tended to have provincial backgrounds, since it was recent migrants to the city who were likely to lack the connections (*wasta*) and other requirements (e.g. English-language skills) that became necessary to secure a highly-paid job.

Beyond income inequality, trade liberalization measures such as Sadat's 'open door' policy in Egypt made new consumer and luxury goods more accessible to the upper and upper-middle classes, exacerbating the apparent urban class divide (Bayat 2002). Writing in 1974, Amin claims that the "new elites are likely to appear more imitable than their predecessors whose social distinction rested on more than mere wealth. They also seem more inclined to display their newly acquired wealth than both the superseded landlords, who tended to enjoy it in the privacy of walled-in palaces" (Amin 1974, p. 102-3). The lower-middle classes faced heightened pressure to keep up with the explosion in consumption of imported goods by the wealthy, such as televisions, refrigerators and washing machines (Amin 1974, p. 107). Most importantly, Hourani (2005) writes that: "Private automobiles, and the roads made for them, changed the way the wealthier classes lived. Their lives were no longer confined to their quarter; they could possess the whole city and its rural hinterland, and they could live far from their places of work" [p. 385]. In Lebanon, the increase in the number of private cars between 1951 and 1967 was two and a half times higher than the increase in the number of vehicles for public transport; in Syria it was 20 times higher (Amin 1974, p. 107). In Egypt, annual imports of private cars increased by 228% in just three years between 1966 and 1969 (Amin 1974, p. 107). This rise in conspicuous consumption heightened sentiments of envy and unfulfilled aspirations among members of the middle class who failed to achieve upward social mobility.

5.2.2 Raised Aspirations & Declining Mobility

In Egypt, Nasser's system of free higher education and guaranteed employment in the state sector raised aspirations of upward social mobility by increasing both the rate of higher educational attainment (e_i) and the return to education (θ). The expansion in education to the lower-middle classes and rural migrants, funded by the 1970s oil-price boom, raised aspirations among a new strata of society. In the decade from 1975 to 1985, Egypt's annual output of university graduates nearly tripled (Wickham 2002, p. 38). Wickham (2002) describes how the "system of populist entitlements designed to reinforce the political loyalty of educated youth ultimately increased their expectations beyond the regime's capacity to deliver" [p. 36].²⁴ We have demonstrated that high mobility aspirations lead to greater religiosity among those who fail to achieve upward mobility, if income inequality is sufficiently high. The reversal in economic growth during the 1980s meant that there were more and more educated youth who failed to achieve upward mobility.

²⁴ Angrist (1995) documents a similar pattern in the Palestinian territories. A dramatic rise in university education between 1981 and 1988 coincided with a sharp increase in unemployment and a decline in real wages among university graduates, in relative and absolute terms.

The decline in upward social mobility was most pronounced for the middle class, especially the lower-middle class and recent migrants to the city (Ibrahim 1980, p. 447). In 1991, the domestic labor market in Egypt was employing only 25 percent of new university and intermediate-level graduates, whereas it was hiring 90 percent of job market entrants who were illiterate or in the next educational category of 'can read and write' (Wickham 2002, p. 42). As such, university graduates who had aspired for and expected upward mobility were faced with the choice between menial work and joblessness. Many chose the latter. Of the new entrants to the labor force in 1986 who remained unemployed, 91 percent had at least an intermediate-level degree (Wickham 2002, p. 38).

Graduates of elite university faculties, and in particular engineers, could have expected the highest rate of upward mobility. As such, our theory explains why they are so heavily represented among Islamic organizations (see Gambetta & Hertog 2007). This reasoning yields a further explanation for why rural migrants are heavily represented: individuals who are willing to incur the cost and discomfort of moving to the city are likely to have higher aspirations for and expectations of upward mobility. That unfulfilled aspirations led to rising religiosity among the educated middle class is clearly evident in the conversations documented by Glain (2004):

In Egypt, Saad explained, a first-year medical student is called "doctor" by his family and the people of his village. "They invest all their hopes and dreams in this young student. All this is squandered when he graduates and can't get a job. He keeps waiting and waiting, and this provides raw material for Islamic groups. The system has betrayed you, he is told. It is corrupt. He is embraced by the Islamic groups who emerged victorious from the Cold War. As part of the middle class, he is far more vulnerable to recruitment than those from the lower class because he has something to lose." [p. 281]

5.3 Why Islam?

Why did people faced with rising inequality and unfulfilled aspirations in Muslim societies turn to religion? We have argued that the critical role of religious activity is to produce religious values which deemphasize negative income comparisons. This means that individuals can give up working harder to meet their income aspirations and instead drop out of the status race by devoting more time to religious activity. In his study of two Egyptian Islamic groups, Ibrahim (1980) finds that the "individual member was asked not only to adhere to the ideas and principles of the group but also to engage in a serious transformation of his own behavior, attitudes and relationships" [p. 441], and that this call for a transformation of values was "found in one Islamic movement after another since the first century of Islam" [p. 444]. Accordingly, Wickham (2002) claims that the most fundamental change produced by Islamic mobilization in Egypt is "a reordering of the priorities that guide individual action" [p. 165]. Her interviews highlight the proud difference in values espoused by "committed Muslims" (*multazim*):

As a graduate, I don't have any problems. We need very little, live life simply, don't need fancy cars and apartments and all that. I married a woman from the university. *We live very simply, but we don't feel poor.* Society imposes shackles on people; it pressures them to worry about clothes and apartments and money. [p. 168] [Emphasis added]

By turning attention from material to spiritual matters, people become less interested in social distinctions based upon income and wealth. Thus, the egalitarian ethos of many religions, including Islam, is particularly well geared to help adherents cope with relative deprivation. In the US context, Fogel (2000) identifies the role of egalitarian principles in four major Christian revivals. Examining World Values Survey data, Davis & Robinson (2006) find that Muslims supporting the implementation of Islamic law (*sharia*) tend also to support egalitarian policies such as government responsibility for the poor and the reduction of economic inequality. El Guindi (1981) explains the role of the veil in egalitarian terms:²⁵

The whole *ziyy* [dress], of which it is a part, is, by being identical for everyone in style, material and range of permissible colors, consistent with the egalitarian spirit of the movement in which the different strata, classes or lifestyles actually represented are erased symbolically by an ideological uniformity which transcends social and economic factors. [p. 476]

Another prominent feature of the contemporary Islamic revival is the strong emphasis on membership in the *umma* or "community of believers." According to Ayubi (1991, p. 18), the religious, rather than social, conception of this community appears relatively late in Islamic thinking. Ibrahim (1980) reports in his interviews: "We heard nothing about the interest of the individual; it was always that of the '*umma*'" [p. 432]. Again the identification with something larger oneself, such as an amorphous transnational community, can be a mechanism for coping with relative deprivation, which is based upon distinctions between individuals.

Why was there not a turn toward other egalitarian and communitarian movements such as socialism? Indeed, what we have proposed is a classic relative-deprivation explanation for a social movement, except that we have identified a particular psychological mechanism (i.e. a change in religious values) by which relative deprivation leads to a religious revival. It is possible that socialism could have served as the popular response to the economic conditions faced by the educated middle class in Muslim societies, had it not been for the fact that both socialism and capitalism were commonly viewed as a cause of economic stagnation and inequality.²⁶ Secondly, the Islamic movement was the most effective form of opposition to authoritarian and repressive regimes in Muslim societies. It is more difficult for authoritarian governments to repress Islamic organizations than secular opposition groups. Government authorities cannot interfere too egregiously in the sacred sphere of the mosque (e.g.

²⁵A uniform dress code is common to many fundamentalist groups, including ultra-orthodox Jews and the Amish.

²⁶Engineers – among the worst affected group – were prominent in left-wing extremist groups in Turkey and Iran in the 1970s, as well as the Palestinian Fatah, at a time when these groups were the most effective form of anti-establishment opposition (Gambetta & Hertog 2007, p. 60).

Kuran 1998, p. 122). The informal networks of independent mosques, Islamic business and social organizations that comprise the Islamic sector are highly decentralized and close-knit, while communication occurs primarily through word of mouth. This makes it possible to evade monitoring by the secret services and mobilize political opposition in the absence of government regulation and control (Wickham 2002, p. 104-5). In Egypt, Sadat even supported Islamic groups in an attempt to neutralize the threat from the left. Thirdly, a large proportion of those worst affected by the growth reversal and rising inequality in Muslim societies had provincial backgrounds. Many of them would have already acquired an appreciation for religious practices and principles, as a result of their traditional upbringing. So for them, Islam was the natural and familiar source of solace. Accordingly, Ibrahim (1980 p. 433) points out that Islamic militants had the same background as radical leftists except that they came from rural areas and small towns, and despite espousing values close to socialism, militants became outraged when this was pointed out.

There is one further reason, which we believe is important, for why Islam may have eclipsed socialism as a response to unfulfilled aspirations and rising inequality. Socialism does not provide a comparably strict moral code, which enables adherents to feel morally superior. In their survey of the psychological literature on envy, Smith & Kim (2007) claim that a common psychological coping mechanism is for a person to “focus on the moral baseness of the target of their envy” [p. 56], and that “[d]erogating a rival (usually on moral dimensions that lend themselves to biased perception) then serves as a defense against the threat to the self as negative feelings about the self become projected onto the advantaged person” [p. 54]. The strict moral code of Islam thus provides a powerful way of coping with relative material deprivation through the satisfaction of feeling morally superior. Consistent with this view, Ibrahim (1980) reports: “It was quite evident to us that typical members felt (and readily expressed) a moral superiority vis-à-vis people outside the movement. Their ability to impose discipline in accordance with the Commandments and Prohibitions of Islam while others cannot or will not was the source of this feeling” [p. 441].

Recall that δ parameterizes the intensity of the coping effect of religious activity. If a strict moral code enables agents to better cope with relative deprivation, we can interpret δ as the ‘strictness’ of a religion. We have shown that a lower level of inequality is required to trigger a surge in religiosity when δ is large. Thus, religions with strict moral codes, such as Islam, should be the ones that grow most in response to rising income inequality. Alternatively, δ might reflect key features of the social environment. Moral superiority became particularly important in light of the sexual revolution in the West and rapid urbanization in Muslim societies. Sexually liberal values had been imbibed by new elites in Muslim societies through exposure to Western cultural products. Rapid urbanization meant that more and more youth with a traditional provincial upbringing came face to face with the alien values of the urban elite. A decline in upward social mobility, meant they could not hope to compete with established elites on economic grounds, but they could do so on a moral basis. As such, economic polarization was matched by cultural polarization.

5.4 Why Muslim Societies?

Growth reversals and economic inequality have been experienced by many societies. So why did a religious revival occur in Muslim societies after the 1970s, but not elsewhere in the world? Based upon our analytical results, we propose that raised aspirations among educated youth, a decline in upward social mobility, greater income inequality among university graduates and extremely low wages faced by the educated lower-middle class *combined* to generate a religious revival in many Muslim societies. To our formal results, we add a complementary explanation, which we have already mentioned: the strict moral code of Islam provided a sense of moral superiority for its adherents, which helped cope with relative deprivation. Rodinson (1979) claims that regardless of class, political affiliation or individual temperament, “everywhere the dominant, almost unchanging image is of Islam as guardian, guarantor, surety, and protector of traditional morals” [p.8]. Ayubi (1991, ch. 2) also makes clear that Islamic morals are collectively enforced and focus heavily upon sex and the family.²⁷

Moreover, it is not true that religious revivals have not occurred elsewhere in response to growth reversals and rising inequality. Though there have been numerous Islamic movements since the birth of Islam (Lapidus 1997, Ibrahim 1980), religious revivals are not confined to Muslim societies, but are widespread and recurrent social phenomena (see El Guindi 1981, p. 466). For example, Fogel (2000) studies the four great Christian awakenings in the history of the United States. The current Evangelical revival appears to fit our theory. As income inequality increased in the United States during the 1980s and 1990s, there has been a religious resurgence not among the mainline Protestant churches, but among the stricter Evangelical denominations and sects such as the Mormons and Seventh-day Adventists (e.g. Berger 1999). The relevant divide when it comes to income inequality in the United States is between individuals who are college educated and those who are not (Goldin & Katz 2008). Educational attainment among mainline Protestants is higher than among Evangelicals (Glaeser & Sacerdote 2002), so that relative deprivation in the United States should be higher for Evangelical Christians. As such, the increase in the wage premium for college education since the 1980s (Goldin & Katz 2008) could explain the Evangelical revival in the United States over that period. In addition, once uniformly catholic Latin America, has since the 1960s experienced “an explosion of conservative evangelical religion, a shift toward Pentecostalism, a rejection of ecumenism” (Martin 1990, p. 54). This coincided with a growth reversal in the region (Loayza et al. 2005). As such, our theory could serve as a more general explanation for religious revivals.

Our theory of moral superiority could also be more generally applied. Iannaccone (1994) argues that churches in the United States with a strict moral code are growing because a stricter standard of religious observance limits free-riding and screens out individuals who lack commitment. We propose an alternative theory of the success of strict churches, based upon relative material deprivation and moral superiority. We

²⁷The strict Islamic moral code is one possible reason why Muslim minorities in the West integrate less and more slowly than non-Muslims. Bisin et al. (2007) find that a Muslim born in the UK and having spent more than 50 years there is approximately as likely to exhibit a strong religious identity as a non-Muslim who has just arrived in the country.

speculate that the stricter moral code of Evangelical denominations – modeled as a high δ – allows adherents to better compensate for relative deprivation by denigrating others on moral grounds. As in Muslim societies, this coping strategy relies upon the polarization of moral values (e.g. sexual values) in American society – the so-called ‘culture wars.’

Appendix.

For equilibrium lower-class income to be increasing in w_L (Condition 1), we need to assume $\frac{dy_{iL}}{dw_L} = \frac{dw_L h_{iL}}{dw_L} = h_{iL} + w_L \frac{dh_{iL}}{dw_L} > 0$ for all $w_L \in (0, w_H)$. This in turn requires that $\frac{dh_{iL}}{dw_L} > -\frac{h_{iL}}{w_L}$ for all $w_L \in (0, w_H)$. The following are primitive conditions which guarantee that this holds in each formulation in the paper. For all $w_L \in (0, w_H)$:

1. *Envy.*

$$\frac{dh_{iL}}{dw_L} = B_L^{-1} [w_L h_{iL} u''(w_L h_{iL}) - w_L h_{iL} \gamma (1 + \gamma) \alpha (y_H - w_L h_{iL})^{\gamma-1}] > -\frac{h_{iL}}{w_L} \quad (\text{A1})$$

where:

$$B_L = -w_L^2 [u''(w_L h_L) - \alpha \gamma (1 + \gamma) (y_H - w_L h_L)^{\gamma-1}] - R''(1 - h_L) \quad (\text{A2})$$

2. *Envy with coping.*

$$\begin{aligned} \frac{dh_{iL}}{dw_L} = \tilde{B}_L^{-1} [w_L h_{iL} u''(w_L h_{iL}) - w_L h_{iL} \gamma (1 + \gamma) \alpha h_{iL}^\delta (y_H - w_L h_{iL})^{\gamma-1}] \\ + \tilde{B}_L^{-1} [(1 + \gamma) \delta \alpha h_{iL}^\delta (y_H - w_L h_{iL})^\gamma] > -\frac{h_{iL}}{w_L} \end{aligned} \quad (\text{A3})$$

where:

$$\begin{aligned} \tilde{B}_L = -w_L^2 u''(w_L h_L) + w_L^2 \gamma (1 + \gamma) \alpha h_L^\delta (y_H - w_L h_L)^{\gamma-1} \\ - 2w_L (1 + \gamma) \delta \alpha h_L^{\delta-1} (y_H - w_L h_L)^\gamma + \delta (\delta - 1) \alpha h_L^{\delta-2} (y_H - w_L h_L)^{1+\gamma} - R''(1 - h_L) \end{aligned} \quad (\text{A4})$$

3. *Unfulfilled aspirations with coping.*

$$\begin{aligned} \frac{dh_{iL}}{dw_L} = \bar{B}_L^{-1} [w_L h_{iL} u''(w_L h_{iL}) - w_L h_{iL} \gamma (1 + \gamma) \alpha h_{iL}^\delta \mu_i^{\gamma-1} (y_H - w_L h_{iL})^{\gamma-1}] \\ + \bar{B}_L^{-1} [(1 + \gamma) \delta \alpha h_{iL}^\delta \mu_i^\gamma (y_H - w_L h_{iL})^\gamma] > -\frac{h_{iL}}{w_L} \end{aligned} \quad (\text{A5})$$

where:

$$\begin{aligned} \bar{B}_L = -w_L^2 u''(w_L h_L) + w_L^2 \gamma (1 + \gamma) \alpha h_L^\delta \mu_i^{\gamma-1} (y_H - w_L h_L)^{\gamma-1} \\ - 2w_L (1 + \gamma) \delta \alpha h_L^{\delta-1} \mu_i^\gamma (y_H - w_L h_L)^\gamma + \delta (\delta - 1) \alpha h_L^{\delta-2} \mu_i^{1+\gamma} (y_H - w_L h_L)^{1+\gamma} - R''(1 - h_L) \end{aligned} \quad (\text{A6})$$

Due to the second-order conditions for a maximum, B_L , \tilde{B}_L and \bar{B}_L are positive.

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