Rebels Without a Cause?

Exploring the role of young adults in democratization from a political demography perspective

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Iran in 2009: students are protesting for democracy

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Contents

Chapter 1: Introduction and Background

The Arab Spring: a source of inspiration

On December 17, 2010, an event occurred that possibly restarted the spread of democracy across the globe. Mohamed Bouazizi, a 26-year old street vendor from the small town of Sidi Bouzid in central Tunisia, set himself on fire in protest over abuse committed against him by corrupt town officials. He died eighteen days later, not knowing that the protests in his name would not only topple the Tunisian government, but would also bring the entire Arab world into political turmoil. The Arab Spring has been blooming ever since and –at the time of writing– still has not reached its conclusion. So far, the Arab Spring protests have forced Ben Ali in Tunisia, Mubarak and Morsi in Egypt, Gaddafi in Libya and Saleh in Yemen out of office. In addition, president Assad of Syria and the Bahraini monarchy are desperately weathering the civil uprisings in their countries by violently suppressing them with military force. And in other countries such as Morocco, Algeria, Jordan and Saudi Arabia, the political elites have proactively initiated major political reforms, hoping to be ahead of protests and attempting to prevent further escalations (Suarez 2011).

The Arab Spring has still not reached its conclusion and its outcome is in many countries still uncertain, but nevertheless it can already be concluded that the Arab Spring is an unprecedented event in the modern Arab world. Still, protests and political instability are nothing new to the region. The Syrian people revolted against Hafez al-Assad (father of the current president) in the late 1970s and early 1980s, but were mercilessly crushed, resulting in

tens of thousands of deaths. There are similar examples in Iraq, Lebanon and Algeria. Many Arab countries have since the Second World War experienced various coups d'état, most notably Syria, Yemen, and Iraq. And where there were no coup d'états, more often than not we would see an increasingly autocratic role by the political establishment (Morocco, Algeria, Jordan, Syria, Saudi Arabia) or foreign intervention (Lebanon). But it is the first time in modern history that a bottom-up political movement of this magnitude is taking place in the Arab World, and it therefore deserves to be studied with particular scrutiny.

What is driving the Arab Spring movement and how can we explain it? What makes the movement so successful and so big? And where is it heading? Can we expect democracies to arise in the region, or rather retreats to autocracy in a plea to preserve stability? Various sources, both academic and non-academic, have attributed the instability of Arab regimes to a restless and dissatisfied youth, that is also sizeable, well organized and influential (Al-Momani 2011; Korotayev and Zinkina 2011; The Economist 2011; Ustundag 2013). But whether the influence of the youth is working in a pro- or anti-democratic direction still remains to be seen. These are guiding questions that have given me inspiration for writing this thesis.

Theories drawn from democratization studies to explain the Arab Spring

The Arab Spring is only the latest episode in a much longer process of democratization worldwide. Over the last two centuries, we have witnessed the spread of democracy from the United States of America to Europe and, eventually, every continent across the globe. Once a rare appearance, democracy has become the most popular form of government since the end of

the Cold War. As of 2010, the researchers who have created the Polity IV dataset label 95

countries (with a population above 500,000) democratic, whereas only 22 are labeled autocratic
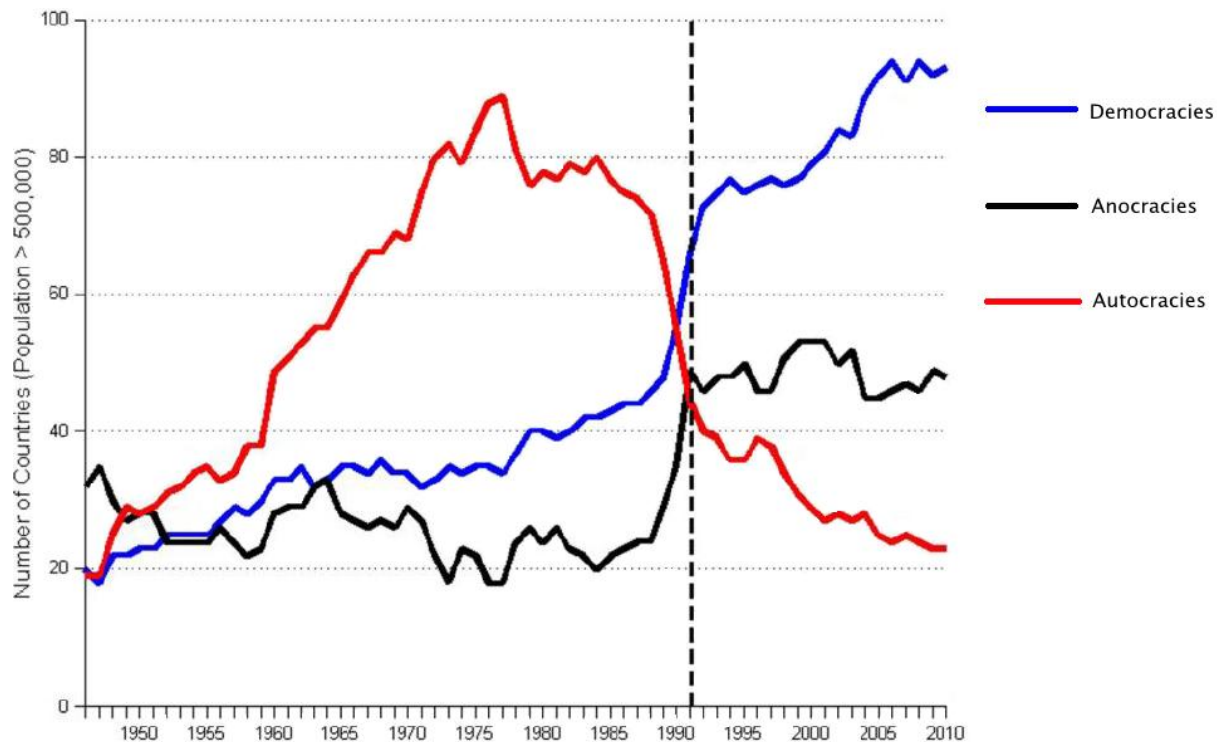
(see Figure 1 below).

When studying the graph above, a continued rise in the amount of democracies after the

end of the Second World War can be observed. This rise stagnates somewhat in the sixties and

seventies, but continues in the 1980s, and particularly around 1990, the end of the Cold War.

After another successful decade, the spread of democracy appears to stagnate again since 2005,

or at least on this graph. Meanwhile, the amount of autocracies, once the most common form

of government, has dwindled dramatically since the end of the Cold War. These autocracies

have either progressed into democracies or into anocracies, which can best be described as

various regimes with some characteristics of democracies as well as autocracies.

In the study of democratization, one of the essential questions is how this worldwide spread of democracy can be explained. Over the last few decades, the academic community has answered this question in many different ways:

-    (Disappearance of) Social Divisions: When relations between social groups become such that there is a mutual distrust between them, each social group will strive to rule without a power-sharing arrangement with its rival social group. This is what Dahl (1971) called a "hegemony". Examples are old-style monarchies (royalty versus common citizens), the United States of America in the eighteenth century (only property-holding men could vote), and the Soviet Union (in which only one electoral candidate was available, who was pre-selected by the Politburo). Since democracy requires some degree of recognition of opposition groups, this situation is regarded as an obstacle to democratization. Dahl argues that only polyarchies – states with high degrees of liberalization but also a high rate of inclusiveness– are a viable form of democracy. This theory indeed has relevance to current developments in the Middle East. For example, the recent coup d'état of the Egyptian armed forces against President Morsi is generally seen as a response to the sentiment of marginalization that a large part of the Egyptian people experienced under the rule of the Muslim brotherhood. The most recent events not only demonstrate the social divisions existing within Egypt (Muslims versus Christians, orthodox Muslims versus moderate Muslims, the political elite versus the lower and middle class) but also the extent to which each group within that divided political landscape is intolerant to the other.

-    Historical context: A complex factor is the historical background that has in one way or another either contributed or impeded the democratization process in different cases. Lipset

(1959) argues that the earliest democracies in modern history were bolstered by Protestantism and Anglo-Saxon culture. Another interesting pattern is how many of the first modern cases of democracies are historically monarchies (Lipset 1960). Because the Middle East has been lagging behind on the democratization front, Islam has been characterized by some as a religion that is intrinsically hindering religion (Huntington 1996). However, that has been contested by others who instead blame the lack of democratization on uneven economic development. In many Middle Eastern states, political power is closely related to control of the wealth gained from oil exports (Ross 2001). Interestingly, the Muslim brotherhood in Egypt is positioned right in the middle of this debate. Even though this Islamist party was elected democratically, its leader, President Morsi was widely criticized for ruling in an undemocratic fashion.[1]

-        Interactions with other states (wars, alliances): It is intuitive to argue that, when there is a lot of interaction between states, it is also no coincidence that they make strides toward democracy at the same time. Huntington's theory of democratization waves (1991) is based on this premise. One democratization movement can spill over into a country that is geographically or culturally related. But likewise, countries that democratize can also be influenced by already established democracies. Indeed, it is striking how the three waves of democratization are preceded by periods in which allied democracies struggle and overcame their non-democratic adversaries. The first wave of democratization occurred when allied democracies defeated the non-democratic alliance of Germany, Austria-Hungary and the Ottoman Empire. The second wave started when allied democracies (in cooperation with the Soviet Union) defeated the fascist regimes of Germany, Italy and Japan. And the third wave reached its climax when the

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[1] For example, Morsi ruled in November 2012 that none of his presidential decrees could be reviewed in a court of law (Beaumont 2012).

Soviet Union was defeated by the democratic West (Huntington 1991; McFaul 2002). The Arab Spring might have initiated a fourth wave, although this idea is treated with caution and many hurdles are believed to be ahead (Diamond 2011). Whether the Arab Spring constitutes a democratization wave remains uncertain, but no matter in which way the movement can be prescribed, the widespread use of internet and social media by its instigators have surely facilitated and accelerated this movement (Howard and Hussain 2013).

- Elite interactions: Democratization is usually not only enforced by a bottom-up populist movement. Rather, democratization also requires a specific interaction between different groups of elites (Casper and Taylor 1996). In transitions from authoritarian rule to democracy, the elite can be grouped in the ruling regime elite and the regime opposition. When liberalizing, the ruling elite may divide itself into a "status quo camp" and a liberal reform camp. The opposition, too, can be divided into a moderate camp that is willing to negotiate with the rulers and a radical camp that is keen on overthrowing the ruling elite. In this model, how democratization occurs (or how it is repressed), depends on how these different elite groups interact. In case of most of the countries involved in the Arab Spring (Tunisia, Libya, Syria), liberal reform camps were so marginalized that they were even forced to operate from outside the country. In Egypt during the Mubarak era, the Muslim brotherhood and other parties unofficially existed, although its candidates had to run for parliament as independents because the parties they represented were illegal. In Yemen, there was no opposing political elite worth mentioning. Out of all Arab Spring movements, the one in Yemen deserves to be called a bottom-up populist movement the most. This absence of a liberal reform camp among the elite is also reflected in its outcome: President Saleh was eventually replaced by Abd al-Hadi, who

had already been vice president under Saleh for 18 years, and thus a true change in the Yemenite political landscape has not (yet) occurred.

-       State repression: What might seem counterintuitive to some is that, during the biggest part of their tenure, authoritarian regimes are actually enjoying wide popular support (Francisco 2005). It is only when regimes find themselves losing popularity that repression of their citizens is necessary to stay in power. However, drawing from evidence collected in the last few decades. leading scholars are increasingly convinced that when mass movements pushing for democracy become big enough, they are capable of toppling even the most repressive regimes (Karatnycky and Ackerman 2005). Institutional configurations and democracy: In her landmark article, Geddes (1999) argues that the chance for countries ruled by authoritarian regimes depend on the type of authoritarian regime it is. She distinguishes between personalistic regimes, military regimes and single-party regimes. These different types are believed to influence the prospects a country has to achieve a stable democracy and the opportunities that pro-democracy actors have to change the status quo. After a longitudinal study, Geddes identifies single-party regimes as the ones most likely to endure. Coincidentally or not, many Arab countries before the Arab Spring either fall partially or fully into this category. Good examples are the regimes in Egypt (National Democratic Party), Syria (Ba'ath Party) and Iraq (Ba'ath Party), all of which require(d) great either great domestic effort or a foreign invasion to be toppled. However, interestingly, the regime that lasted the longest in the region was the personalistic regime of Muammar al-Gaddafi in Libya.

Modernization theory in focus

In the previous section, a variety of theories has been outlined, all of which can provide some degree of insight into the Arab Spring. In the context of democratization studies, however, perhaps the most popular theory explaining democratization is modernization theory. It is also the most important theory forming the background of this paper because it is the only theory capable of specifically analyzing the role of young adults in the democratization process, which is essential in understanding the Arab Spring movement. That is why it deserves a deeper analysis in a separate section.

Modernization theory was incorporated within the realm of political science at the end of the 1950s.[2] It regards a country's democratization process as merely one element of its modernization as a whole (Lerner 1958; Lipset 1959, 1960) and argues that more modernized countries are more likely to be democratic (Lerner 1958). What exactly modernization means in this context is a whole set of variables that are debated among proponents of this theory.

Despite the popularity of modernization theory, it has not always been devoid of criticism. Huntington (1968) noted that during the 1950s and particularly the 1960s, rapid social changes resulting from modernization led to an increase in political violence, which ran against expectations of modernization theory. Modernization, he argued, was actually an important source of political instability rather than a stabilizing factor. Another school of thought created in response to modernization theory was dependency theory. It took issue not with the problem

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[2] Modernization theory itself finds its roots in the Age of Enlightenment of the eighteenth century, during which prominent thinkers such as Voltaire and Turgot formulated the idea that the pursuit of science and the advancement of reason are key to the advancement of society as a whole. The exact workings of modernization were theorized for the first time by the sociologist Émile Durkheim at the turn of the twentieth century.

of social change and political violence but rather the consequences of economic development itself. O'Donnell (1973) and Cardoso and Faletto (1979) argued that the emergence of autocratic regimes in Latin America was attributed to increased dependence on the West (and particularly the United States) in a globalizing economy. In a similar vein, to this day it is argued that the flow of investment capital from the Western world is distributed unequally within the developing world, which in turn not only stimulates plutocracy rather than democracy in the developing world, but also keeps the imbalances global trade system in place (Toye and Toye 2003).

As a result of these responses to modernization theory, it lost popularity during the 1970s and 1980s until the end of the Cold War, when the third wave of democratization swept most powerfully across the world. Not only did most former communist countries democratize, many third world countries did the same, particularly after periods of economic growth. This observation was used as a counter-attack against dependency theory by Przeworski and Limongi (1997). Ever since, modernization theory has regained its popularity, and convincing studies such as Inglehart and Welzel (2005) provided elaborate quantitative evidence to support the theory and to demonstrate the meticulousness as to how the modernization process occurs.

Which elements of modernization exactly contributed to the spread of democracy has been widely debated. Although a wide range of modernization factors has been proposed, most notably economic factors have been associated with it (Lipset 1959). To date, economic development is the only element of modernization that has been generally accepted as contributing to democracy (Welzel 2009). Even though some important political scientists have doubted the importance of economic development in relation to democratization in the past

(Acemoglu et al. 2008; Epstein et al. 2006; Przeworski and Limongi 1997), it has been successfully defended by others (Boix and Stokes 2003; Geddes 1999). Other variables have been proposed too, such as urbanization, literacy rates, and access to media and communication devices (e.g. telephone, internet), but these proposal have been met with more criticism and have thus far not convinced the entire modernization theory community.

Political demography and its place within modernization theory

Since the last decade, and particularly in the last few years, a new modernization factor has been proposed to contribute to democratization and that is demographic change, specifically the demographic transition. The demographic transition is a standard pattern in which birth and mortality rates develop over time as a country develops. It can schematically be divided into four stages. Figure 2 (see next page) illustrates how, under normal circumstances, a country's birth and mortality rate (vertical axis) develop over time (horizontal axis). During stage 1, both mortality rates and birth rates are high and in equilibrium. Then, as a country modernizes, initially the mortality rate drops (stage 2), followed by a drop in birth rate (stage 3). Eventually, a country finds itself at a lower equilibrium of birth and mortality rates (stage 4). The red line in figure 2 shows that, during a country's demographic transition, its population also goes up. Also, the ratio between younger and older people changes dramatically. This is not only because the birth rate decreases, but also because life expectancy increases. The more a country progresses through its demographic transition, the smaller the percentage of young adults is in the population. From an economic perspective, progressing through the demographic transition constitutes a "demographic window of opportunity" (National Intelligence Council 2013). This is because particularly during stage 3 of the transition phase, the

national population is not only growing as a whole (and thus also the country's importance in the world economy), the working population specifically also makes up a considerable part of the entire population, and is capable of having long, productive careers due to an improved health care system.
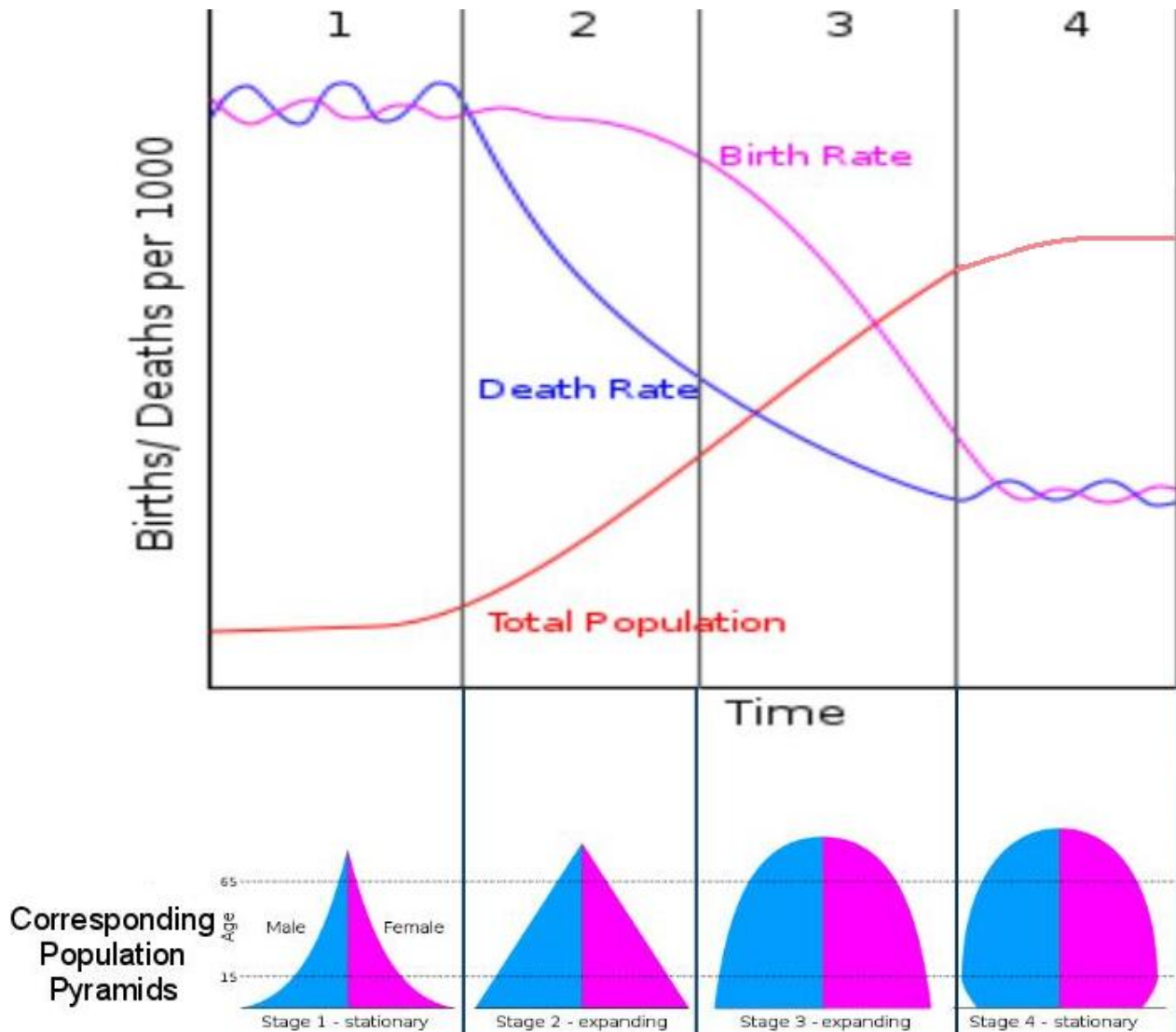

Figure 2: Schematic overview of the demographic transition model

The demographic approach to politics has been labeled "political demography" (Goldstone, Kaufmann, and Duffy Toft 2012; Weiner 1971). Herbert Moller was the first to

suggest the demographic factor in the modernization debate (Moller 1968), although he did not

link demographic changes to democratization itself. He enumerates a list of very diverse

moments in history where political change has coincided with "youth bulges"[3], such as the

Protestant Reformation (1520s), the French Revolution (1789), the breakup of the Habsburg

Empire (1880-1918), the fall of the Weimar Republic and the rise of Adolf Hitler (1933) and the

African-American Civil Rights Movement (1955-1968). However, even though his enumeration

of youth movements is certainly eye-catching, it lacks scientific rigor to rule out that instances of

political change can only be explained by large youth cohorts coinciding with the particular

period in which certain political events occurred. For example, while Moller's suggestion of the

important role of youth in Hitler's rise to power is captivating, he does not give

counterarguments to disprove the traditional historical explanation.

Weiner (1971) was the first to formally define the new study of political demography. He

defined it as 'the study of the size, composition, and distribution of population in relation to

both government and politics.' The argument that, in times of a "youth bulge", there is an

increased chance of regime instability and/or political violence, has repeatedly been made since

then (Choucri 1974; Fuller and Pitts 1990; Goldstone 1991, 2002; Leahy Madsen 2011; Leahy

Madsen et al. 2007; Mesquida and Wiener 1999; Urdal 2006, 2007, 2011). Similar research is

still done today, such as Weber (2012), who argues that as the proportion of young men in a

democratic country's population increases, its chance for democratic collapse also increases.

Only in the last few years has it been proposed that countries that have progressed

down the path of the demographic transition process are more likely to become democratic

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[3] Youth bulges can be defined as "extraordinary large youth cohorts relative to the adult
population" (Urdal 2004).

(Cincotta 2009; Dyson 2013). Countries which have not progressed fully through the demographic transitions process yet, it is argued, are experiencing a high risk of political violence and civil strife (Leahy Madsen et al. 2007; Mesquida and Wiener 1999; Urdal 2004, 2006, 2007, 2011). This is because countries that have not yet progressed fully through the demographic transition still have a youthful population. It is argued that youth are more likely to support a political extreme ideology (whereas democracy requires a politically moderate climate to facilitate dialog), are easier indoctrinated by political leaders and are more capable of political violence (Weber 2012). This observation is connected with Hobbes' theory of the social contract: in a political climate of perceived threats to security, citizens are willing to give up basic freedoms in exchange for guarantees to security from authoritarian leaders (Cincotta 2009; Cincotta and Doces 2012). This in turn is believed to be an obstacle to the democratization process. Thus, youth, when overrepresented in a country's population, are argued to be an obstacle to democracy (Cincotta 2008).

The puzzle

In the previous section, a new movement has been described that links the demographic transition with democratization. When studying figure 3 (see below) at first glance, the notion that the demographic transition contributes to democratization indeed seems to make sense.
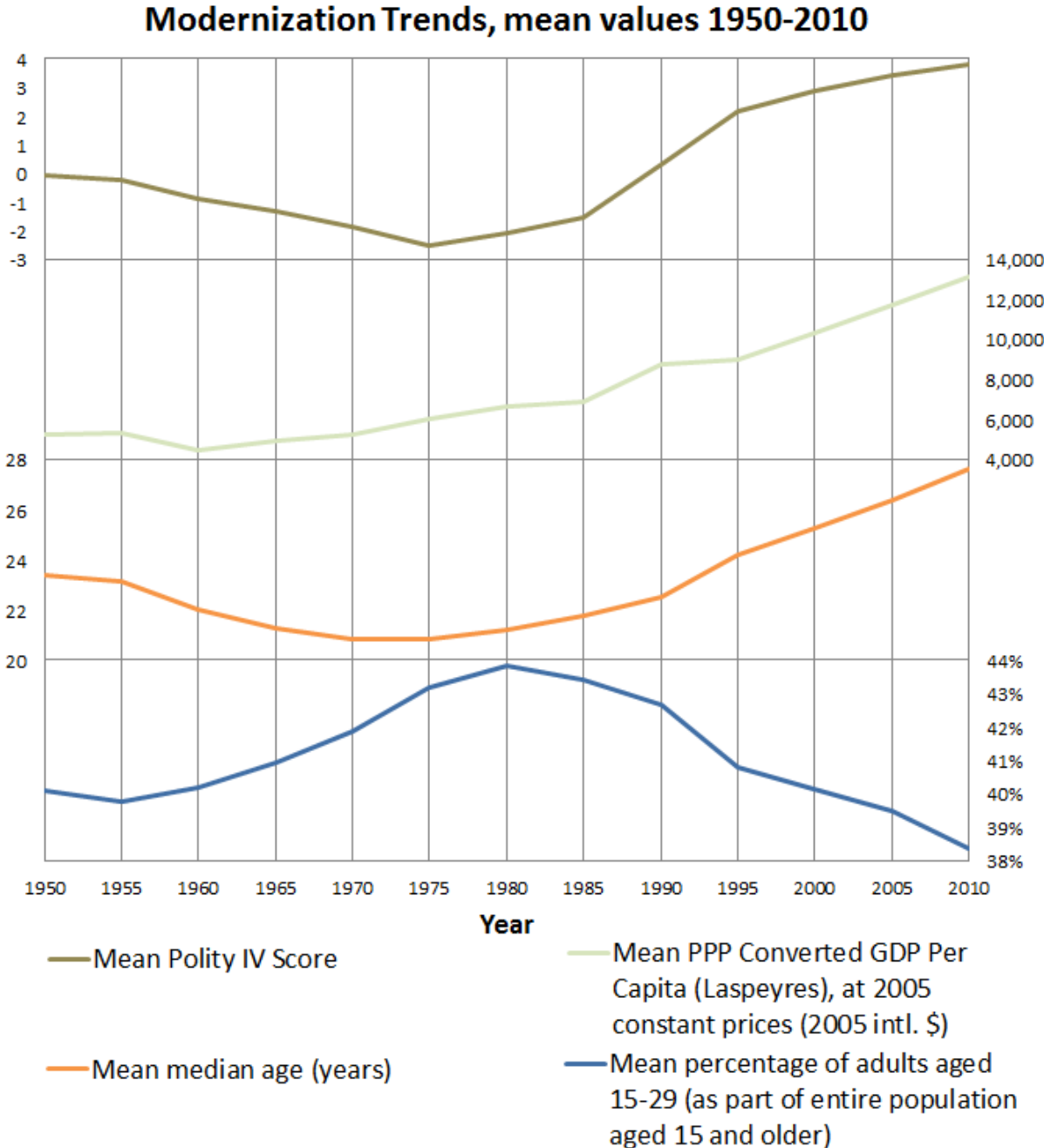
Modernization Trends, mean values 1950-2010

Figure 3: Trends of variables associated with modernization (1950-2010).

When selecting all countries with a population over 500,000 (taking 1950 as the year of

measurement) and observing them longitudinally from 1950 until 2010, an increase in the mean

level of democracy can be observed (as is measured by the mean Polity IV score).[4] Similarly,

there is an increase in the mean median age for all countries combined, as well as a decrease in

the mean percentage of adults aged 15-29. Median age and the percentage of adults aged 15-

29 are both indicators of the extent in which a country has progressed through its demographic

transition.[5] Finally, there is also an increase in mean GDP per capita that coincides with the

increase in the mean level of democracy, particularly after around 1980. In sum, all four

variables in figure 3 are moving in the same direction, and thus it is logical to suspect at least a

correlation between these variables, although this graph does not yet give any clue as to the

causal direction between these variables.

However, the reliability of the observation that the demographic transition and

democratization are linked comes under fire when relating this to the practical context of the

Arab Spring. If an increase in median age and a decrease in the percentage of young adults are

supposed to facilitate democratization, should the Arab Spring not rather result in a retreat to

autocracy? After all, in various Arab countries, a "youth bulge" has been observed (Cincotta

2009, 2011; Dhillon 2008; Korotayev and Zinkina 2011), which should theoretically destabilize a

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[4] The decrease in the mean Polity IV score between 1950 can at least partially be explained by
newly established independent countries that have only just freed themselves from colonial
rule. More often than not, these countries have autocratic regimes, particularly in their first few
decades. These newly independent countries negatively influence not only the mean Polity IV
score, but also the other three variables in the above graph (with the exception of the mean
percentage of adults aged 15-29 because this variable follows an inverse trend when compared
to the other three variables).

[5] Median age is the dependent variable used by Dyson (2013). Percentage of adults aged 15-29
is a more widely used variable in the political demography literature. It is used by Cincotta and
Doces (2012) and Weber (2012), amongst others.

country and thus instigate a public call for increased security and thus less political freedoms (the Hobbesian bargain). There are thus conflicting insights into the role of young adults in the democratization process, and it is the goal of this paper to give further clarity on this issue within the framework of modernization theory by means of quantitative research.

There are multiple reasons why it is interesting to do further research into the role of young adults in the democratization process. Firstly, even though this theory has only been established recently, it has already made its impact on government policy. For example, the National Intelligence Council, an important advisory organization to the United States government, included policy recommendations based on the premise that the demographic transition and the democratization process are linked in its *Global Trends 2025* report (2008), which was presented to Barack Obama at the start of his first term as President of the United States. As such, it is obvious that putting this theory under academic scrutiny is of high practical relevance.

Secondly, giving more insight in the role of young adults in the democratization process makes a contribution not only to the political demography literature, but also to modernization theory as a whole and to the democratization debate in general. This topic deserves closer attention as well because, intuitively, there are reasons to doubt the validity of the arguments that young adults obstruct the democratization process. From a historical perspective, (Moller 1968) already argued for the importance of youth in enforcing political change. But if the youth are such an instrumental force in bringing about political change, why should such change not also include a change toward democratization?

Thirdly, there are not only intuitive reasons that can lead one to be suspicious of this theory. When studying history, the plausibility of this theory is further reduced because it is at odds with various historical examples. For instance, the overthrow of Indonesia's dictatorial government under President Suharto in 1998 and the subsequent transition towards democracy (the 1998 "Reformasi") occurred under circumstances in which the demographic transition stagnated for some years. In the years leading up to the 1998 Reformasi, the percentage of young adults actually proved to be somewhat higher than before. In other historical cases, such as Singapore or China, autocratic regimes remain firmly in place despite already having (nearly) completed the demographic transition. In such cases, the theory predicts that a transition toward democracy should already have occurred and fails to explain why the real political situation in these countries turns out to be rather different.

Fourthly, the supportive arguments brought forward by those defending the position that young adults impede democratization are not all indisputable and deserve to be further inspected. This will be discussed in the next section.

Reasons to doubt previous research

In the previous section, I have discussed the question of what is the role of young adults in the democratization process. Before starting my own research, this section details the shortcomings of previous research that has attempted to answer this question. It provides a motivation on how to address the same question with a different methodology.

Proponents of the theory that young adults impede democratization argue that, when a large proportion of a country's population consists of young adults, this reduces the country's

chances of becoming a democracy. However, the supportive arguments for this position are unpersuasive. These supportive arguments will be discussed below.

Cincotta and Doces (2012, 103) hypothesize that "a youthful age structure tends to impede the advent of liberal democracy". This hypothesis is echoed in other key articles of this new school of thought as well (Cincotta 2008; Dyson 2013; Weber 2012). A large presence of youth is argued to destabilize a country, and this supposedly favors autocracy. Hereby the authors assume that autocratic regimes are intrinsically better at dealing with instability. But a quality of democracy is that its structure allows for a peaceful transition of leadership. This is particularly true for consensus democracies with power-sharing arrangements such as Switzerland and Belgium (Lijphart 1999). In these systems, minorities are better represented in the executive branch of government and therefore are less inclined to feel marginalized. A convincing case can be made that this form of government can actually provide more stability than autocratic regimes (Andeweg 2000).

Cincotta uses the Hobbesian Bargain[6] as an argument to support the demography theory (Cincotta 2009). However, Hobbes' theory is already dating from 1651. Hobbes himself did not test his theory with empirical evidence, and even if he did, the theory itself could very well be outdated. Although it makes an interesting philosophical argument, to use the Hobbesian Bargain as a supporting argument does not meet today's academic standards. Furthermore, Cincotta does not provide evidence that, in the minds of citizens, threats to one's personal security and property are actually perceived to be caused by a large presence of youth. Also, in connection to the Hobbesian Bargain argument, Cincotta curiously argues that Indonesia is an

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[6] The Hobbesian Bargain postulates that 'citizens are willing to relinquish liberties when faced with threats to their security and property' (Cincotta 2009).

example of a country democratizing because of the demographic transition (Cincotta 2008). This cannot be a good example for multiple reasons. First of all, the demographic figures do not speak in Cincotta's favor. There is no case of a decreasing percentage of youth, and actually in the years leading up to the overthrow of Suharto, there was even a youth bulge. Following Cincotta's Hobbesian Bargain argument, this would mean that Indonesia was actually supposed to become even more autocratic. However, in reality, it was particularly the students and other young adults who pushed for democratic change by means of numerous pro-democracy protests in in 1998, that were incidentally mostly non-violent and supported by the majority of the Indonesian public.

Cincotta also fails to explain cases in which a country has remained autocratic despite the fact that it has already completed its demographic transition. When these cases occur, he resorts to a curious explanation that these countries have remained autocratic because their rulers are exceptionally charismatic (Cincotta 2009). This line of reasoning falsely assumes that a country's democratization process (or lack thereof) solely depends on the charisma of its political leader, and in fact, Cincotta does not give any evidence to support this claim. Is it really not possible that countries have democratized, despite the fact that their leaders were exceptionally charismatic? Or is it really not possible that countries have remained autocratic despite the fact that their leaders are not exceptionally charismatic? Without proper evidence, it is easy to claim that a leader was "perhaps charismatic, but not charismatic enough", but this argument lacks credibility.

Another proponent of the theory that young adults impede democratization is Timothy Dyson (2013), although he presents different supporting arguments than Cincotta. However,

these arguments are equally doubtful. Dyson's first argument is that, when during a demographic transition period the birth rate decreases, there is an increasing opportunity for women to play a bigger public role because it is no longer necessary for many women to stay home to raise children. This development, according to Dyson, is in itself already a step toward democracy but he also argues that a larger presence of women in public roles positively influences the democratization process. However, the advancement of women's rights should not be equated with a step toward democracy in general. This is clearly demonstrated when observing (post-) communist countries, in which women's rights have been on a high level for decades. A recent report even suggested that China has the highest percentage of female top executives (Grant Thornton 2013). As such, China is regarded by many to be even ahead of many democracies on the issue of women's rights. Yet, China is clearly far from a democracy. Civil and political rights in China might be severely limited, but these limitations apply equally to men and women. Besides, at this moment, Dyson's argument that a public role of women in society facilitates democratization is premature. There is no evidence to support the position that women on average favor democracy more than men, nor is there any evidence that women play a more democratizing role than men in any other way.

Dyson also argues that "the basis for establishing a consensus for rule by elected representatives in proportion to the numbers of people is likely to be facilitated by slower population growth [which occurs at the end of the demographic transition]" (Dyson 2013, 85-86), but he does not provide evidence to support this claim. Korotayev and Zinkina (2011) make a valuable counter-point that when demographic changes occur, a country's stability does not necessarily have to be diminished, even in the case of autocratic regimes. They make a

compelling argument that Egypt's Arab Spring was not just caused by marginalized youth, but

rather that Mubarak's government failed to respond in time to youth issues such as rising youth

unemployment. Furthermore, there are reasons to believe that younger generations are

actually more in favor of democracy than their elders. That is particularly true for the post-Cold

War period. The demise of the Soviet Union bolstered the image of democracy worldwide. This

is reflected in the sheer amount of countries that democratized around 1990. Also, the rise of

Internet and other mass media particularly affects the younger generations in modernizing

countries. Through access to this media, youth are connected with and influenced by media

from developed, democratic countries, which in turn positively influences their opinion of

democracy. Besides that, digital media also has proven to be an effective political mobilization

tool in the case of the Arab Spring (Howard and Hussain 2013). It is therefore expected that

today's younger generations are even more supportive of democracy than the youth of the

1990s.

The value of education

In addition to responding to the arguments put forward by Cincotta and Dyson, one

more important counter argument against the theory that young adults impede

democratization can be made. When examining the role of young adults in the democratization

process, it should be noted that the youth of today are not the same as the youth of a few

decades ago in important respects. Today, youth are on average much higher educated than a

few decades ago. This, in turn, makes them also more supportive of democracy (Lutz, Crespo

Cuaresma, and Abbasi-Shavazi 2010).

Trends of mean Polity IV score and mean percentage of higher educated young adults
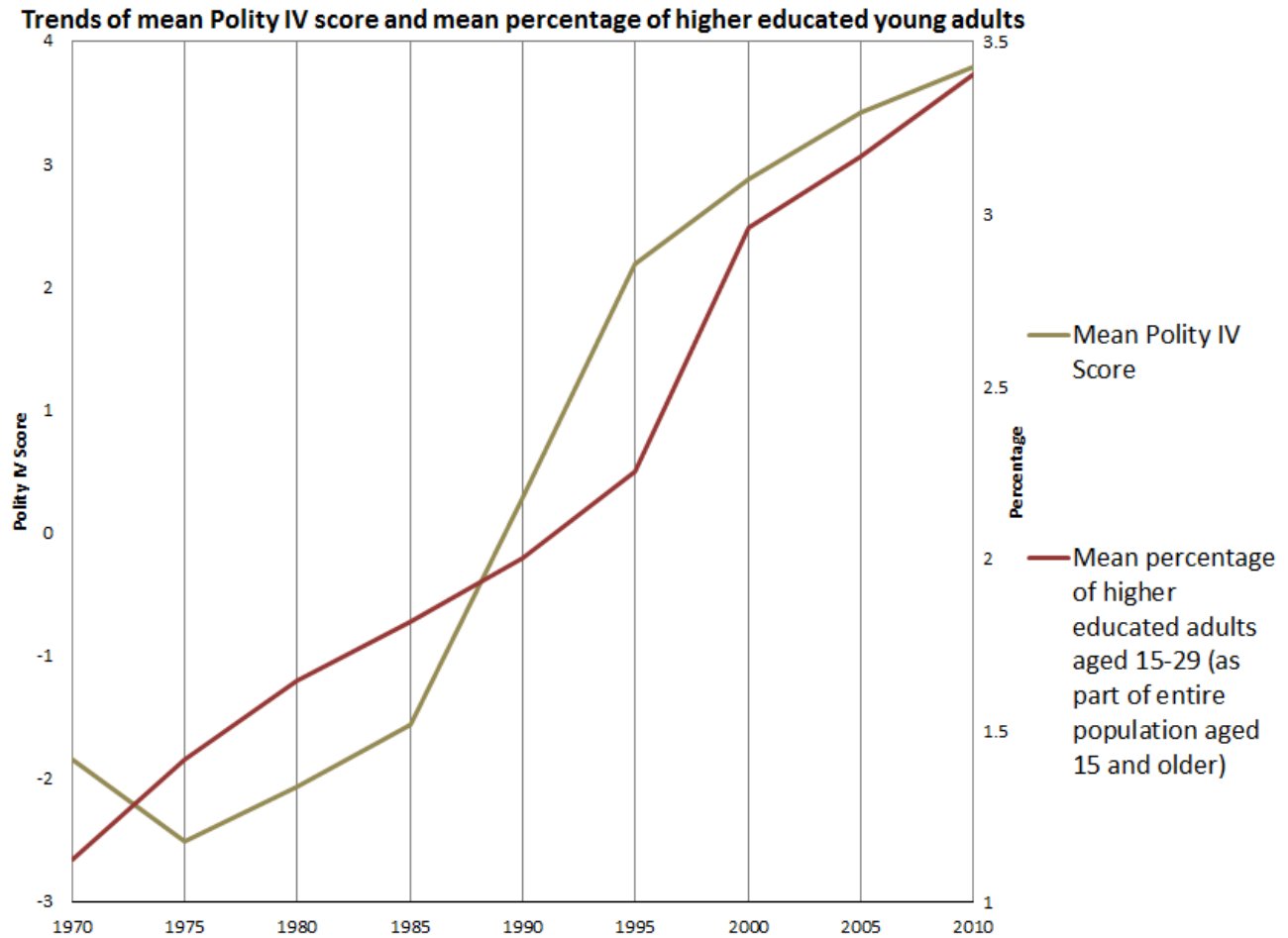
Figure 4: Trend of the mean Polity IV score and the mean percentage of higher educated

young adults over time (1950-2010).

Indeed, figure 4 looks promising regarding a possible link between education and

democratization, but besides statistical evidence on a large scale, other evidence suggesting this

link already exists. Regardless of age, higher education rates have already been associated with

more democratic politics since the 1950s (Lipset 1959, 1960). Evidence on an individual level has

already shown a positive causal mechanism between education and political participation

(Brady, Verba, and Lehman Schlozman 1995), which in turn is argued to stimulate

democratization (Glaeser, Ponzetto, and Shleifer 2007). A higher educated youth are less

inclined to adopt politically extreme positions and are also less likely to be manipulated politically (Lutz, Crespo Cuaresma, and Abbasi-Shavazi 2010). This reduces the possible destabilizing influence of young adults on the political climate, thus undermining the theory that young adults impede democratization. Actually, it can be stated that, since particularly in developing countries the younger generations are more highly educated than the older generations, they can also be expected to be more inclined to support democracy than the older generations in the same countries. It is therefore important to be careful in comparing data regarding youth from a few decades ago with more recent data regarding youth. It is striking that none of the literature defending the theory that young adults impede democratization addresses this argument, and both Cincotta and Doces treat young adults from a few decades ago exactly the same as young adults today.

For these reasons, I wish to contest the position that young adults impede democratization in my own research.

Chapter 2: The research

Towards a new database to test the influence of young adults on democratization

In the previous chapter, I have given a step-by-step explanation on why it is necessary to carry out research on what the role is of young adults on democratization from a demographic and quantitative perspective. In this chapter, a description is given of how that research is carried out.

A methodology has been adopted that on the one hand strives to maximize comparability with previous findings, while on the other hand introduces new perspectives on how to answer the research question. Unfortunately, there is no way of perfectly achieving both of these goals and sacrifices on both have to be made.

Measuring the degree of democracy

The two most important variables for this research are measures of democracy and measures of how far each country has progressed through its demographic transition. When measuring the degree of democratization, we have to take into account that the concept of democracy is as broad as it is old. Aristotle, himself a citizen of the first democracy in the world, already studied the conditions in society which determine different forms of government (including democracy) prevail in his work *Politics*. Of course, the concept of democracy has much changed since the fourth century BC. Today, when people speak of democracy, they are

not only referring to the narrow concept of free and fair elections. Rather, democracy has effectively become an umbrella term for different societal elements that are supposed to be paired with free and fair elections in modern society, such as freedom of expression, freedom of press, rule of law and minority rights. It is therefore fitting to use an adjusted form of the Polity IV score from the Polity IV database (Marshall, Jaggers, and Gurr 2012), which aims to measure the political and societal elements that most would associate with a modern democracy today. The Polity IV score is a net score of two different scales indicating democratic characteristics and autocratic characteristics. On both the scale indicating democratic and autocratic characteristics, elements are measured in the areas of competitiveness of executive recruitment (e.g. "are multiple parties and individuals allowed to run in elections?"), openness of executive recruitment (e.g. "are all citizens allowed to run for elections?"), constraints on the chief executive (e.g. "are there any limitations to the authorities of the president?"), regulation of participation (only for the autocratic scale, e.g. "are there institutions that regulate how political preferences are expressed?") and competitiveness of participation (e.g. "do opposition groups have space within the legislative institutions to push for an alternative agenda?"). If a country's political system has more democratic characteristics than autocratic ones, its net Polity IV score will be positive, and vice versa. The highest possible score is +10 (+10 on the democratic scale, 0 on the autocratic scale) and the lowest possible score is -10 (0 on the democratic scale, -10 on the autocratic scale). However, some of the Polity IV data falls outside of the -10/+10 range for various reasons. These outliers have been recoded so that they fall within the desired spectrum.[7]

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[7] The Polity IV dataset includes scores outside of the -10/+10 range for exceptional

By using the Polity IV dataset, this research departs from previous research on the same topic carried out by Cincotta and Doces (2012) and Dyson (2013). Cincotta and Dyson use the Freedom House scores for their research (Freedom House 2013). While it is a fair and generally respected reference to measure the degree of democracy, the Freedom House rating has its shortcomings. Freedom House focuses more on political freedoms and civil liberties from a citizen point of view, and less on variables on a governmental level such as the fairness of the election procedures. Furthermore, it is also The Freedom House dataset also suffers from conceptual shortcomings. Also, while Freedom House has admittedly taken steps in recent years to increase the transparency of their methodology, they still offer insufficient insight as to how the final score is calculated (Munck and Verkuilen 2002). The final measure is also less preferable vis-à-vis the Polity IV score: the subcategory scores of the Freedom House dataset are added to a score for two variables: Political Rights and Civil Liberties. Then, a country is called either "free", "partially free" or "not free". Although these terms sound like they are easy to understand, they are also more arbitrary when compared to the Polity IV score due to the ambiguous thresholds deciding in which of the three categories a country falls. Also, lumping countries into three categories is needlessly removing subtle differences in the degree of

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circumstances: -66 for cases when country regimes have been interrupted by foreign powers, -77 for cases of "interregnum" or "anarchy" and -88 for cases of transition from one type of regime to another. The interregnum (-77) and transition (-88) cases have been recoded to a score between the previous year and the successive year. For example: Cambodia had an interregnum period in 1975. Its Polity IV score for 1974 is -5 while its score for 1976 is -7. Thus, the score for 1975 is calculated as (-5- 7)/2=-6. When the interregnum or transition case takes multiple years, the annual scores are calculated as a "step by step" change. For example, after the Iraq War in 2003, Iraq went through an 8-year transition from an autocratic regime rated -9 to an anocracy rated +3 on the Polity IV scale. This 12-point gap has been bridged by annual steps dividing the gap in 8 parts. Hence, the following scores are calculated: 2003: -7.5; 2004: -6; 2005: -4.5; 2006: -3; 2007: -1.5; 2008: 0; 2009: 1.5; 2010: 3.

democracy or autocracy. Admittedly, the Freedom House can still serve well in a statistical

model in which independent variables are used to predict the dependent variable by means of

trinomial (free/partly free/not free) logistic regression. [8]

Dyson's recent paper (2013) uses Vanhanen's database (Vanhanen 2013), which is more

straightforward but also less precise in its measure of democracy.[9] This database is

subsequently multiplied by a country's median age. While its appeal for its simplicity is

understandable, it is also highly inaccurate. For example, the Vanhanen system gets very

different results for two given democracies when they have different electoral systems. For

example, the two-party system of the United States gets very different results compared to a

multi-party system such as The Netherlands. Because in the United States, elections are typically

won by a narrow margin between the Democrats and the Republicans, the amount of votes to

parties other than the winning party is relatively large. In Vanhanen's database, this

corresponds to a relatively democratization index compared to multi-party systems. In a multi-

party system such as in the Netherlands, the amount of votes going to parties other than the

winning party can be as high as 75%, which is reflected in a much higher democratization index

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[8] The Polity IV dataset could serve for the purpose of logistic regression too. Marshall, Jaggers and Gurr (2012) designate any country in the database with a Polity IV score of +6 or higher to be a democracy and any country with a score of -6 or lower to be an autocracy. For example, trinomial logistic regression (predicting democracy/anocracy/autocracy as in figure 1) is an interesting alternative.

[9] Dyson 2013: "Vanhanen's index of democratization is the product of two variables. The first, C, measures the extent to which political competition occurs in society. This is reflected by the proportion of electoral votes that goes to parties other than the largest one. The second, P, measures the degree to which there is political participation. This is indicated mainly by voter turnout, expressed as a proportion of the population, although allowance is also made for the taking of referendums. The upper limit of both proportions is restricted at 0.7. Therefore the value of ID (=C*P*100) ranges between zero and a theoretical—and unattained—maximum of 49."

than for the United States. This does not reflect reality because generally the Netherlands are not regarded to be more democratized than the United States. Also, Vanhanen's database simply omits other elements that are vital for modern democracies in its measurement, such as constraints on the executive.

Another approach to researching the role of youth on democratization perhaps could have been creating a dataset of instances where democratization did and did not occur, as measured by increases in the Polity IV score per country. However, the drawback of this approach is that there is no clear and unambiguous definition of how big a shift in the Polity IV needs to be in order for it to qualify as a valid shift toward democracy. No matter where you draw the line, there will always be a grey area where certain cases could be qualified either as a move to democracy or not. It is therefore more appropriate to use the Polity IV score itself, which is an ordinal value and does not require any labeling. Letting the Polity IV numbers speak for themselves in this regard gives more precision to the research and eliminates the risk of selection bias.

Demographic variables

Regarding measurement of the demographic transition, both of the most prevalent demographic variables from previous research have been used, which are median age and the proportion of young adults in the overall adult population.[10] For most of the countries, this

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[10] In my dataset, median age is a straightforward median age measurement of the entire population. This mirrors Dyson's dataset. For the proportion of young adults in the overall adult population, some calculations are necessary. First data in which the national population is split in 5-year categories (e.g. 0-4, 5-9, etc.) is selected. Then, the percentage of young adults is calculated by dividing the population aged between 15-29 by the entire population aged 15 and

demographic data can easily be found on the United Nations Population Division website

(United Nations Population Division 2013), but the database has been expanded by

calculations[11] and data collection outside the United Nations database.[12] Median age is a

straightforward tool to indicate to which extent a country has progressed through its

demographic transition.[13] Also, the proportion of young adults per country can easily be

calculated using data from the United Nations Population Division website. Both measurements

are adopted in order to maximize comparability with previous research findings. Whereas the

median age is generally used to measure the extent to which a country has completed its

demographic transition, the proportion of young adults is the most often used variable in the

"youth bulge" literature.

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above. This means that children aged 0-14 are not part of this figure, which is reasonable since they are not politically active. This nearly mirrors the method chosen by Cincotta, who divides the population aged 15-29 by the population aged 15-64 (the working population). In my own dataset, I also include citizens aged above 64, and for good reasons too: not only is the working population nowadays expanding to ages above 64, but it is also perfectly possible to be politically active in whichever degree without being part of the working population.

[11] Regarding the proportion of young adults, data for some countries that used to be united in the past has been calculated by using data from the separate countries (e.g. data for Czechoslovakia between 1950 and 1990 was calculated by using data from the Czech Republic and Slovakia for the same years). This unfortunately could not be done for median age because data with a perfect age distribution of both countries, which is needed in order to calculate the median age, is not available. As a result, the database used for this research has a slightly bigger collection of figures regarding the

[12] Extra demographic data was obtained by contacting the national statistical agencies of Germany (for data regarding West Germany and East Germany between 1950 and 1990) and Taiwan (which is not a member of the United Nations and therefore does not have its demographic data in the United Nations Population Division database.

[13] The further a country has progressed through its demographic transition, the lower its amount of children and young adults, and the higher its amount of middle-aged and senior citizens. Thus, median age increases when a country progresses through its demographic transition. This is also a good way to measure the proportion of young adults in a population, albeit indirectly.

Economic development

Economic data from the Penn World Table (version 7.1) have been used for this research. The Penn World Tables are a leading indicator of real Gross Domestic Product (GDP) per capita. Specifically, purchasing power parity (PPP) converted GDP per capita at 2005 constant prices in international dollars has been chosen because this most tangibly reflects the degree of economic wealth that is present on a citizen level. GDP per capita reflects the degree of economic development that a country has reached. Since this is the most widely accepted variable to contribute to democratization in modernization theory literature, it has been incorporated into the database. When including this variable in statistical analysis, it can give some sense regarding how influential the other variables are when they are compared with the uncontested variable of economic development.

Education

In order to measure the degree to which a country's younger adults are educated, the IIASA/VID[14] database has been used for this research (KC et al. 2010; Lutz et al. 2007). This is the only global database measuring national education rates in 5-year age groups, which also makes it the only suitable database for measuring the education rate of the young adults group (aged 15-29) as precisely as possible. The data is given for each 5 years between 1970 and 2010. Data for the years 2000, 2005 and 2010 are forward projections based on source data from 1995 by using the Global Education Trend (GET) scenario, as is recommended by the creators of this data

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[14] IIASA stands for the International Institute for Applied Systems Analysis (based in Laxenburg, Austria). VID stands for the Vienna Institute of Demography.

(KC et al. 2010). Unfortunately, the IIASA/VID database only dates back to 1970, so education rates before that year are unavailable. Also, the database does not cover every country worldwide. Only about 120 countries are covered. This unfortunately limits the general database used for this research somewhat.

The education rates are expressed in terms of the International Standard Classification of Education (ISCED) 1997 levels of education. An ISCED level of 5 or 6 indicates that a person has received tertiary (post-high school) education. By multiplying the percentage of the people within the age categories 15-19, 20-24 and 25-29 with their respective proportions within the entire adult population, a new variable is created called "influence of higher educated young adults". This variable measures the proportion of the entire adult population (age 15 and above) that is both young (between 15 and 29 years old) *and* highly educated.

Sample (countries and years)

This research was intended to be carried out with data from as many countries and years as possible, using data ranging from 1948 until 2010. This is because the data are derived from different sources which also use different intervals between measurements. The United Nations Population Division (UNPD) data for median age and proportion of young adults, as well as the education rate data are collected each 5 years (from 1970 until 2010), while the Polity IV dataset has a score for each country for each year. In order to merge these data, the annual Polity IV data are recoded to 5-year averages.[15] Using 5-year averages rather than annual Polity

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[15] For example, for the year 1950, an average Polity IV score is calculated from the data of 1948, 1949, 1950, 1951 and 1952; then, for 1955, the average score is calculated from the data of 1953, 1954, 1955, 1956 and 1957; etc. At the moment of writing this paper, there is no Polity IV

IV data has an advantage: it calculates a more robust indication of the extent to which a country is democratized, and that is less influenced by short-term political developments. Also, it reflects the entire political history that a country has gone through over the years in a more accurate fashion. This method allows for almost all of the Polity IV annual scores to be included, and except for Bosnia-Herzegovina, every country has been included in the database.[16]

Demographic data regarding the median age and the proportion of young adults are only available for the larger countries that have a population above 100,000 (taking 1950 as the year of measurement), but Polity IV only has a dataset of countries with a population smaller than 500,000 are excluded from the research. This means that, in the end, only countries with a population over 500,000 are included in the research.[17]

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data for 2011 and 2012, so only data from 2008, 2009 and 2010 are used in order to calculate the average scores for 2010. Also, for some of the countries that have not existed continuously between 1948 and 2010, other average scores have been calculated with less than 5 years of data. For example, since Kenya only gained independence in 1964, no average scores are included for 1950, 1955 and 1960. To calculate the average score for 1965, only 4 years are used: 1964, 1965, 1966 and 1967.

[16] Bosnia-Herzegovina has been excluded entirely because, ever since its independence in 1993, it only has recorded Polity IV scores of -77 (interregnum) and -66 (foreign interruption). Therefore, no meaningful or reliable score can be assigned that falls within the -10/+10 range. Also, the following cases have been removed because they could not be used as part of a 5-year average: Trinidad & Tobago 1962; Guyana 1966-1967; Serbia 2006-2007; Macedonia 1991-1992; Croatia 1991-1992; Yugoslavia (ccode 347) 1991-1992; Montenegro 2006-2007; Slovenia 1991-1992; Moldova 1991-1992; Russia 1992; Estonia 1991-1992; Latvia 1991-1992; Lithuania 1991-1992; Ukraine 1991-1992; Belarus 1991-1992; Armenia 1991-1992; Georgia 1991-1992; Azerbaijan 1991-1992; Sierra Leone 1961-1962; Uganda 1962; Tanzania 1961-1962; Burundi 1962; Rwanda 1961-1962; Djibouti 1977; Lesotho 1966-1967; Botswana 1996-1967; Morocco 1956-1957; Algeria 1962; Libya 1951-1952; Sudan 1956-1957; South Yemen 1967; Bahrain 1971-1972; Qatar 1971-1972; United Arab Emirates 1971-1972; Turkmenistan 1991-1992; Tajikistan 1991-1992; Kyrgyzstan 1991-1992; Uzbekistan 1991-1992; Kazakhstan 1991-1992; Bangladesh 1972; Vietnam 1976-1977; Malaysia 1957; Timor-Leste 2002.

[17] It may also be true that data from smaller countries may be less reliable due to different political behavior that is observed in these small countries.

From the final database, a sample has been created that ranges from 1970 until 2010 in 5-year intervals. 1970 has the smallest amount of cases (73), while 1995 until 2010 all have the biggest amount (97). The increase in the amount of countries after 1990 is explained by the end of the Cold War and the post-communist countries that have been added to the education rates source database since then.[18]

Year	N
1970	73
1975	77
1980	78
1985	78
1990	81
1995	97
2000	97
2005	97
2010	97

Figure 5: Overview of the amount of cases per year in the research sample

When studying figure 6 (see next page), it is clear that the sample does not represent the database as a whole. This is because the sample has been selected from cases where education rates are available. The countries in which education rate has been measured tend to be more

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[18] The sample consists of the following countries (all from 1970 until 2010 except where explicitly stated otherwise): Argentina, Armenia (from 1995), Australia, Austria, Bahrain (from 1975), Bangladesh (from 1975), Belgium, Benin, Bolivia, Brazil, Bulgaria, Cameroon, Canada, Central African Republic, Chad, Chile, China, Colombia, Comoros (from 1975), Costa Rica, Croatia (from 1995), Cuba, Cyprus, Czech Republic (from 1995), Denmark, Dominican Republic, Ecuador, Egypt, El Salvador, Eritrea (from 1995), Estonia (from 1995), Ethiopia, Finland, France, Gabon, Germany (from 1990), Greece, Guatemala, Guyana, Haiti, Honduras, Hungary, Ireland, Italy, Japan, Jordan, Kazakhstan (from 1995), Kenya, Kyrgyzstan (from 1995), Latvia (from 1995), Lithuania (from 1995), Macedonia (from 1995), Madagascar, Malawi, Mauritania, Mauritius, Mexico, Mongolia, Morocco, Mozambique (from 1975), Namibia (from 1990), The Netherlands, New Zealand, Nicaragua, Niger, Nigeria, Norway, Panama, Paraguay, Peru, Philippines, Poland, Portugal, Romania, Russia (from 1995), Saudi Arabia (from 1990), Singapore, Slovenia (from 1995), South Africa, South Korea, Spain, Sweden, Switzerland, Syria, Tajikistan (from 1995), Thailand, Togo, Turkey, Turkmenistan (from 1995), United Kingdom, United States of America, Uruguay, Uzbekistan (from 1995), Vietnam (from 1980), Zambia, Zimbabwe.

developed than the rest of the database, which is reflected in the sample having a higher mean

Polity IV score, GDP per capita and median age, and a lower percentage of young adults.

Year	Variable	Mean from sample	Mean from database
1970	Polity IV Score	-0.65	-1.85
	GDP per capita	6,686	5,150
	Influence of higher educated young adults	1.14	1.11
	Percentage of young adults	40.27	41.89
	Median age	22.60	20.86
1975	Polity IV Score	-1.15	-2.52
	GDP per capita	7,593	5,804
	Influence of higher educated young adults	1.43	1.41
	Percentage of young adults	41.51	43.18
	Median age	22.58	20.83
1980	Polity IV Score	-0.49	-2.07
	GDP per capita	8,571	6,409
	Influence of higher educated young adults	1.65	1.64
	Percentage of young adults	41.97	43.85
	Median age	23.12	21.18
1985	Polity IV Score	0.40	-1.56
	GDP per capita	8,843	6,614
	Influence of higher educated young adults	1.82	1.81
	Percentage of young adults	41.47	43.43
	Median age	23.92	21.80
1990	Polity IV Score	2.66	0.29
	GDP per capita	10,032	8,267
	Influence of higher educated young adults	2.00	2.00
	Percentage of young adults	40.72	42.68
	Median age	24.80	22.50
1995	Polity IV Score	4.20	2.18
	GDP per capita	10,013	84,80
	Influence of higher educated young adults	2.26	2.25
	Percentage of young adults	38.43	40.81
	Median age	26.40	24.23
2000	Polity IV Score	4.75	2.87
	GDP per capita	11,476	9,691
	Influence of higher educated young adults	2.97	2.96
	Percentage of young adults	37.40	40.13
	Median age	28.77	25.29
2005	Polity IV Score	5.06	3.42
	GDP per capita	12,909	10,928
	Influence of higher educated young adults	3.18	3.16
	Percentage of young adults	36.50	39.49
	Median age	28.77	26.39
2010	Polity IV Score	5.08	3.78
	GDP per capita	13,930	12,192
	Influence of higher educated young adults	3.42	3.40
	Percentage of young adults	35.36	38.37
	Median age	29.94	27.65

Figure 6: Mean statistics of the research sample and database by year

Methodology

The goal of this statistical analysis is to measure up the strength of the variable "influence of higher educated young adults" in predicting the Polity IV score when compared to the other demographic variables proposed by Dyson (median age) and Cincotta and Doces (percentage of young adults). Since all variables involved are ordinal scale variables, linear regression tests (with the Polity IV score as the dependent variable) will be carried out in which the predictive strength of each variable will be compared by their respective standardized coefficients (Beta), as well as their statistical significance. Also, the overall predictive strength of the model will be measured by the coefficient of determination (adjusted R^2). This linear regression test needs to be done twice to measure up the influence of higher educated young adults against the median age and the percentage of young adults separately. This is because these two variables are basically two different variables that serve to measure the same trend (the demographic transition). If both of these variables would be included in the same linear regression test, it would produce misleading results.

Also, the author's claim that the role of youth has changed over time needs to be tested. That is why the sample is split by year and then linear regressions tests are carried out only by using cases that belong in the same year. Again, this needs to be carried out twice: once to compare the predictive strength of influence of higher educated young adults with that of median age, and once to compare its predictive strength with the percentage of young adults.

Chapter 3: The findings and their meaning

In the previous chapter, explanations were made on how the statistical research is prepared. In this chapter, we proceed to presenting the findings that this research has yielded, as well as how to interpret them.

Linear regressions irrespective of time

Figure 7 (see below) demonstrates the results of two linear regressions in which Polity IV is the dependent variable. Model 1 compares the predictive strength of the influence of higher educated young adults with median age and GDP per capita. In model 2, median age is replaced by the percentage of young adults and the same linear regression test is done.

Model		Beta	Statistical significance	Adjusted R^2
1	(Constant)	(n/a)	0.000	0.378
	GDP per capita	0.103	0.033	
	Influence of higher educated young adults	0.198	0.000	
	Median age	0.423	0.000	
2	(Constant)	(n/a)	0.000	0.359
	GDP per capita	0.158	0.001	
	Influence of higher educated young adults	0.219	0.000	
	Percentage of young adults	-0.348	0.000	

Figure 7: Two linear regressions (dependent variable is Polity IV score)

In both models, the influence of higher educated young adults appears to be the second strongest predictive variable of the Polity IV Score, behind median age and percentage of young adults respectively. Also, interestingly, GDP per capita turns out to be the weakest variable in both models. Although in both models 1 all variables are capable of predicting Polity IV with

statistical significance, interestingly GDP per capita has the least significance in this respect

(0.033 and 0.001).

Linear regressions by year

When carrying out separate linear regressions by year for model 1, we get the results as

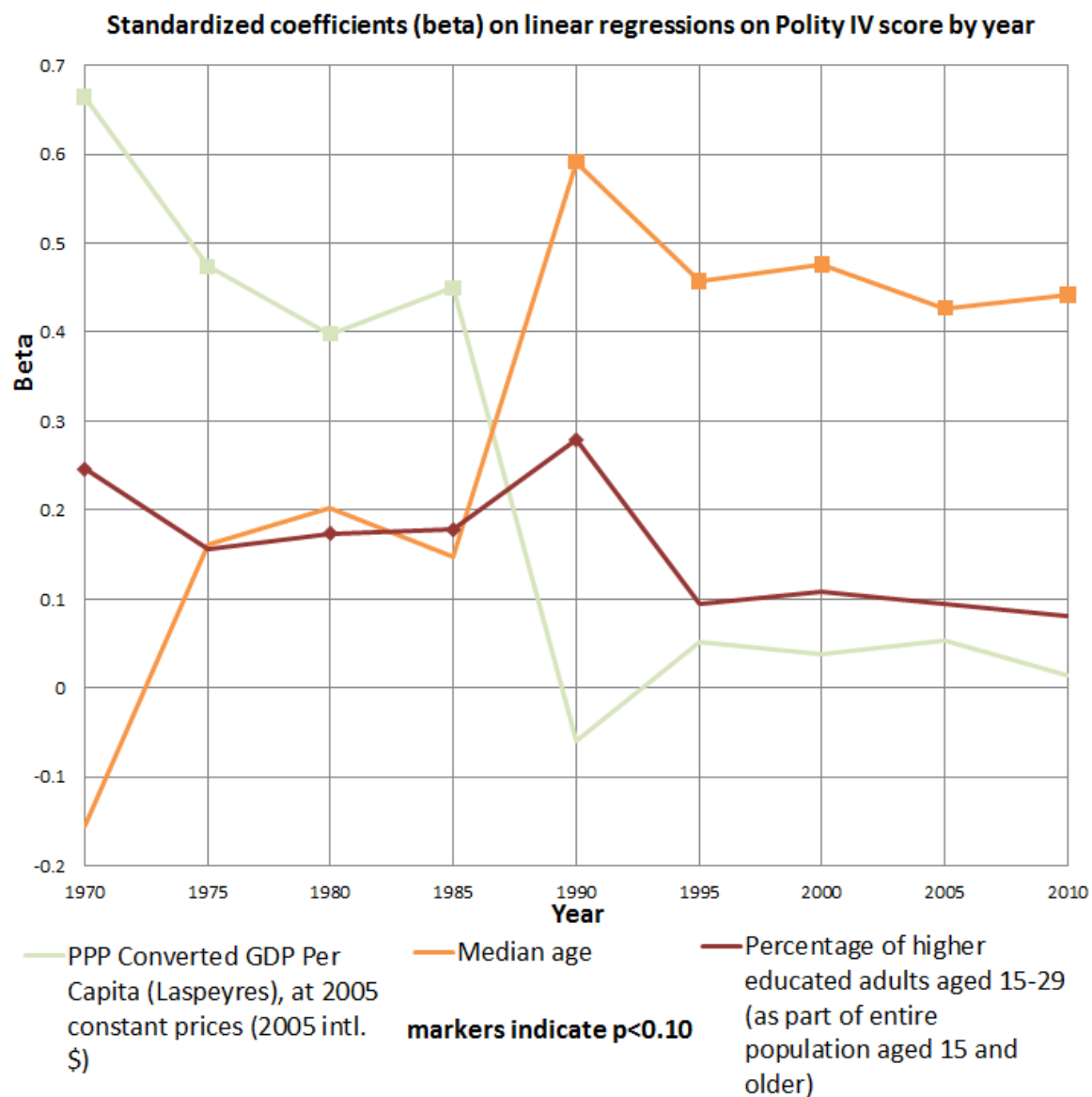presented in figure 8 (see below).

Figure 8: Linear regression (dependent variable is Polity IV score) by year for model 1, 1970-2010

When carrying out separate linear regressions by year, all three independent variables still manage to have statistically significant predicting value, as indicated by the multiple markers depicted in the graph (each marker indicates a Beta value with a statistical significance smaller than 0.10). However, what is most striking in this graph is how stable the beta values of the percentage of higher educated young adults are over time when compared to the beta values of the other two independent variables. For the percentage of higher educated young adults, the beta values only fluctuate by less than 0.2, whereas the beta values of the other two independent variables vary considerably more and even go from positive to negative. Also, the percentage of higher educated young adults is the only independent variable with p-values that are constantly below 0.5, meaning that, for some years, the other two independent variables actually are more likely to be misleading rather than of any predicting value for some years.

Year	Adjusted R^2
1970	0.521
1975	0.487
1980	0.450
1985	0.457
1990	0.484
1995	0.270
2000	0.269
2005	0.222
2010	0.199

Figure 9: Coefficients of determination for linear regressions by year (independent variable is Polity IV score) for model 1, 1970-2010

Figure 9 (see above) illustrates how the overall predictive value of linear regressions in model decreases over time. Interestingly, the beta values of the percentage of higher educated young adults are statistically most significant when the R^2 scores are also highest, whereas median age produces higher beta values at times when the adjusted R^2 scores are lower.

Standardized coefficients (beta) on linear regressions on Polity IV score by year

Legend:

— PPP Converted GDP Per Capita (Laspeyres), at 2005 constant prices (2005 intl. $)

— Percentage of adults aged 15-29 (as part of entire population aged 15 and older)

— Percentage of higher educated adults aged 15-29 (as part of entire population aged 15 and older)
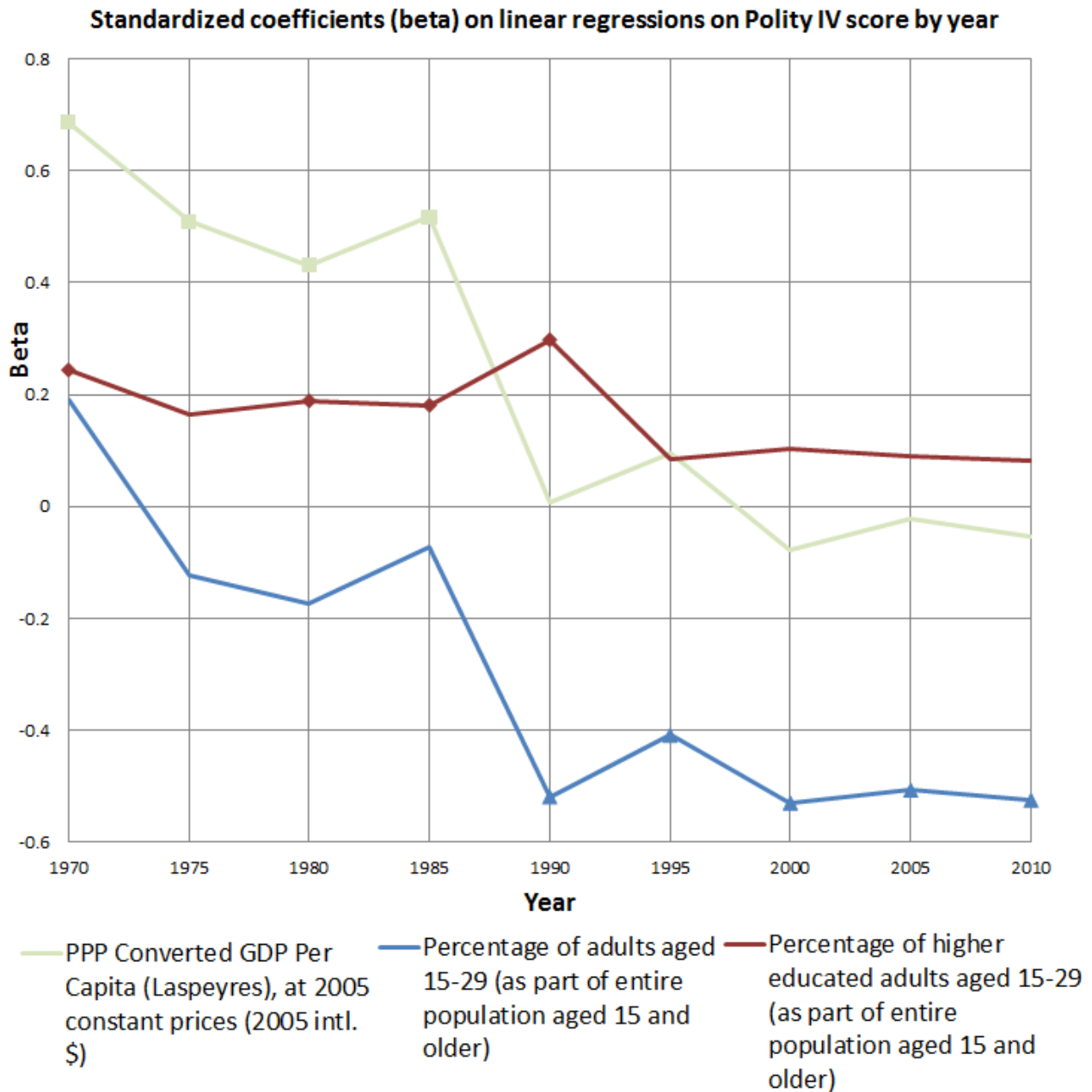
markers indicate p<0.10

Figure 10: Linear regression (dependent variable is Polity IV score) by year for model 2, 1970-2010

Figure 10 produces similar results as in figure 8[19], but the percentage of higher educated young adults perform slightly better this time. The fluctuations in the beta values are even

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[19] Indirectly confirming how similar the variables of median age and the percentage of young adults really are.

smaller than in figure 8 and the p-values are still constantly below 0.5, where the other two variables fluctuate more heavily and incidentally have p-values above 0.5. Also, interestingly, the beta values of GDP per capita do not reach as far below zero as in figure 8, which further undermines its reliability.

Year	Adjusted R^2
1970	.529
1975	.484
1980	.450
1985	.453
1990	.475
1995	.253
2000	.286
2005	.241
2010	.228

Figure 11: Coefficients of determination for linear regressions by year (independent variable is Polity IV score) for model 2, 1970-2010

As expected, figure 11 shows similar numbers as figure 9. Again, the years in which percentage of adults aged 15-29 receives beta values that are statistically significant are also the ones with the lowest R^2 values.

Curiously, the adjusted R^2 scores for model 2 are higher than those for model 1, whereas model 1 receives a higher R^2 in the overall regression in figure 7.

Conclusion and discussion

After rigorous statistical testing, it remains inconclusive which of the variables has won the contest of being the best predictor of the Polity IV score. On the one hand, the variables proposed by Dyson (median age) and Cincotta and Doces (percentage of young adults) score some strong results, particularly when in the post-cold War era. But on the other hand, the new variable "influence of higher educated young adults" knows how to defend itself. As

demonstrated by the very stable beta values in figures 8 and 10, it has proven itself to be a trustworthy predictor of the Polity IV score, no matter which year you ask it to do its job.

What is more, there are still reasons to doubt the strength of Dyson and Cincotta and Doces' variables, even after quantitative analysis. Their variables score the strongest when the overall predictive strength of the linear regression is weakest. What is worse, their variables show a large amount of fluctuation over time as to which direction it is supposed to predict the Polity IV score is going. This would mean that young adults would pose a threat to democratization, whereas their role would be benign in this regard a few decades later. Not only does this observation make any logical sense, it has not been suggested at all by Dyson and Cincotta and Doces themselves.

This stalemate illustrates how much political demography still needs further research before it is capable of making any assertions regarding the role of young adults with persuasiveness. After all, what kind of youth are we talking about? The data and arguments presented in this paper already suggest that education stimulates pro-democracy sentiments among the youth, but how exactly the force of education interacts with autocratic political regimes is open to debate. If more research into this topic is to be done in the future, particularly more data regarding education is required. Data regarding the education rates of the poorest, most underdeveloped countries is scarce, and these are particularly the countries that are relatively often not democratic. Also, more recent data can help give a clearer picture of what the role of youth and education is in the twentieth century.

An interesting by-product of this research is the discovery that the predicting value of economic development is relatively poor when related to the other independent variables. This

goes against expectations and established consensus within the modernization theory community. The question of why the GDP per capita scores so poorly after the end of the Cold is worthy of a separate study.

Finally, the academic community is in need of a comprehensive database that details *how* democratization occurs. A reliable source that gives quantitative insights into this would have been extremely valuable in assessing the role of youth. For instance, are the most violent overthrows of autocratic regimes also occurring in countries that have the biggest proportion of young adults in their populations? Without quantitative sources, we can only speculate.

Until that time, the Arab rebels will have to wait until they get their definite answer on whether their efforts truly contribute to the democratization of their countries. Meanwhile, all they can do is get back to their studies and hope for the best.

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Data

The dataset used for this paper can be accessed at the following website: http://tinyurl.com/thesisdata

The above webpage also includes all source files from which the dataset was created, as well as files containing calculations with which new variables were created from the source variables.