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Philippines: Case Study on Human Development Progress Towards the MDG at the Sub-National Level

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Philippines Case Study on Human Development Progress Towards the MDG at the Sub-National Level

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I. Background and objectives

In 1990, the Philippines committed itself to a set of goals agreed upon by members of the United Nations to reduce global poverty and other forms of human deprivation by the end of the century. Among the Millennium Development Goals (MDG), as they have come to be known, are six outcomes to be achieved by the year 2015. These are:

Goal 1: Eradicate extreme poverty and hunger
- Target 1: Halve the proportion of people living in extreme poverty
- Target 2: Halve the proportion of population who suffer from hunger – as indicated by prevalence of underweight children under-5 yrs and the proportion of population below the minimum level of dietary energy consumption.
- Target 3: Halve the proportion of people with no access to safe drinking water

Goal 2: Achieve universal primary education
- Target 4: Achieve universal access to and completion of a full course of primary education

Goal 3: Promote gender equality and empower women
- Target 5: Eliminate gender disparities in primary and secondary education preferably by 2005, and at all levels of education not later than 2015

Goal 4: Reduce child mortality
- Target 6: Reduce under-5's and infant mortality rate by 2/3

Goal 5: Improved women's reproductive health
- Target 7: Reduce maternal mortality ratio by ¾ by 2015 (half by 2000, half by 2015)
- Target 8: Increase access to basic reproductive health services to 60% in 2005, 80% in 2010 and 100% in 2015

Goal 6: Combat HIV/AIDS, malaria and other diseases
- Target 9: Halt and reverse the spread of HIV/AIDS
- Target 10: Have halted by 2015 and begun to reverse the incidence of malaria, tuberculosis and other major diseases.

In a recent assessment of the Philippines' effort towards the MDG [2], regional disparities in outcomes were noted. This hinted at possible spatial factors, such as intrinsic geographic features and location-specific socio-political dynamics, driving performance. Such correlations were not further explored however.

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[1]With research and technical assistance from Jeoffrey Ducanes.

[2] Philippine Progress Report on the MDG, UNDP Manila, 2002

The objective of this paper is to look at provincial level outcomes to determine which areas or peoples are lagging in key MDG outcomes and why. It seeks to answer the question: are any patterns of isolation or discrimination across locations or sub-populations indicated by the current dispersal of outcomes? If so, what may explain these? We focus our attention on current poverty, per capita income, infant mortality and primary education completion rates, that is, the MDG targets most closely related to the dimensions of the human development index. Related measures of deprivation - the percentage of underweight children under age five and the lack of access to safe water – are also probed.

Some key findings:

- **Climate type** matters a great deal and negatively affects levels of poverty, per capita income and infant mortality. Climate captures overall distribution of rainfall which is influenced by frequency of typhoons, but the frequency of typhoons itself is not statistically significant.
- Other important geographical correlates relate to proximity or access to markets. For instance, we find that a higher proportion of **population inland** is correlated with lower poverty, higher per capita income and lower infant mortality, as is the number of operational **commercial ports** - indicating that for an archipelago like the Philippines, it is not coastal proximity per se but effective access that counts. **Road density** and a higher proportion of **population near the capital** are also correlated with lower poverty and better education outcomes.
- Political economy counts. Provinces run by **local political dynasties** are lagging on most outcomes, as are areas involved in social and armed conflict. The latter includes provinces currently contested by **Moro secessionists** (a political battle rather than a religious one) and provinces in the Cordillera Administrative Region, where the highest concentration of **indigenous people** per province are found.

We will proceed as follows: the first part will profile the Philippines, highlighting key administrative, geographic and socio-political features. The second part will review the status of the MDG and identify disparities on the sub-national level. The third part will look more deeply into the poverty/per capita income, infant mortality and education goals (e.g. MDG targets #1, 4 and 6) and explore possible correlates, both geographical (topography, climate, market proximity) and socio-political (ethnicity, social conflicts, public institutions). The fourth part will conclude.

II Profile of the Philippines

Administrative Subdivisions. The Philippines is an archipelago of 7100 islands off the coast of Southeast Asia. It has one of the longest coastlines in the world and a total land area of about 300,00 square kilometers. Eleven islands make up 95 percent of the landmass of which two, Luzon in the North and Mindanao in the south, together with the cluster of Visayas Islands that separate them, represent the three major island groups of the archipelago. For political administration purposes, these three groups are subdivided

into 16 regions, seventy-eight (78) provinces, eighty-two (82) cities, 1525 municipalities and 41,939 villages or "barangays".

Luzon is divided into seven regions, Visayas into three regions, and Mindanao into six. In Luzon are Northern Luzon (R1) a.k.a. Ilocos, the Cordillera Administrative Region (CAR), Cagayan Valley (R2), Central Luzon (R3), Southern Tagalog (R4), the Bicol Peninsula (R5) and the National Capital Region (NCR), a.k.a. Metro Manila, the commercial and political center of the country. In the Visayas are Western Visayas (R6), Central Visayas (R7) and Eastern Visayas (R8) a.k.a. Samar-Leyte. Mindanao hosts Western Mindanao (R9), Northern Mindanao (R10), Southern Mindanao (R11), Central Mindanao (R12), CARAGA and the Autonomous Region of Muslim Mindanao (ARMM).

Note that the Cordillera Administrative Region in Luzon and the ARMM in Mindanao are considered special regions. Both were formed in the early 1990s after the 1987 Constitution provided for autonomy for the Cordillera indigenous people and for Muslim-Mindanao.[3] CAR accounts for only 11.7% of the 11 million indigenous people all over the country but is the only region whose provinces have an IP population of more than 87% of total population.

Annex 1, Map 1: Administrative Map (including regional maps)

More than half (56%) of the 76 million Filipinos live in Luzon; the rest are almost equally distributed in Mindanao and the Visayas. The average annual growth rate between 1995-2000 was 2.36 which, if continued, can double the country's population in 29 years. From 1960-1990, the urban population grew at an average annual rate of 4.43 percent while the rural population grew at a much slower pace of 1.64 percent. By 1990, close to half of the country's total population were already living in urban areas; by 2025 this is expected to be at 65 percent.[4]

Collectively, the 1608 towns and cities of the country form a national, hierarchical network of settlements characterized by a single large and dominant urban center (Metro Manila), several medium sized urban centers (regional urban centers), and many other smaller settlements. Metro Manila is the country's primary link to the rest of the world, handling the largest values and volumes of domestic and international transactions, and accounting for one third of GDP; its daytime population is equal to the sum of the next 30 or so largest urban centers. [5] Metro Cebu (in R7) and Metro Davao (in R11) try to provide international-level services to the Visayas and Mindanao respectively, but are

[3] Only four out of a possible thirteen provinces in the south agreed to be under the ARMM region however. Likewise, only one out of the six cordillera provinces actually voted 'yes' to becoming an autonomous region; as a result, an "administrative" rather than an "autonomous" region was formed.

[4] Intertemporal comparisons of "urban" and "rural" population trends are misleading. The identification into urban/rural areas is done at the barangay level and is contingent on the presence of a minimum set of infrastructures and establishments in the barangay. This means that the list changes from census to census. This presents a problem when comparing urban and rural areas intertemporally as one is essentially comparing different sets of areas.

[5] National Framework for Physical Planning (NFPP) for 2001-2030.

nowhere near the stature of Metro Manila. Metro Manila had a population density of 15,575 in year 2000, eight times that of Metro Cebu in the same year. [6]

Annex 1, Map 2: Population Density 1980 and 2000

Topography[7]. The Philippines has great topographical variation that has posed major challenges for the provision of necessary infrastructure to and from human settlements. It is largely mountainous creating narrow coastal plains and interior valleys and plains. All islands are prone to earthquakes.

Luzon, the most mountainous, has three major mountain ranges – the Cordillera Central (in CAR), the Sierra Madres (spanning R2 and R4), and the Carballo Mountains (in R2) – and two major plains - Central Luzon plain (in R3) and Cagayan Valley (in R2). The southern part of the island has dominantly volcanic topography and counts five active volcanoes in the area.

Mindanao is likewise mountainous, with volcanic peaks, uplifted plateaus, low flat basins, incised valleys and canyons and other forms of physiographic development. It has five major mountain ranges, including the Eastern/Pacific Cordillera (in CARAGA), the Bukidnon-Davao (spanning R10-R11) Range and the Bukidnon-Lanao Plateau (spanning R10-R12), and a major basin (Agusan Basin in CARAGA).

Mountains and hills, river basins, flood plains, plateaus, valleys and other forms of physiographic development characterize the Visayas island group at the center of the archipelago.

Annex 1, Map 3: Topography (slope)

Climate and **weather** is also varied. Generally described as tropical marine, four climate types actually span the country: Type 1, with a distinct dry (November to April) and wet (May to October) season; Type 2, with no dry season and a very pronounced maximum rain period from December-January; Type 3, whose seasons are not very pronounced, with a short dry season and no very pronounced maximum rain period; and Type 4, with rainfall evenly distributed throughout the year. Average annual rainfall thus differs greatly across the country with the mountainous east coast section of the country receiving five times more annual rainfall (about 5000 millimeters) than some sheltered valleys (less than 1000 millimeters).

Extreme climactic events such as droughts, floods, strong winds and storm surges are inherent components of the Philippine climate system. The Philippines is located in a region that has the greatest frequency of tropical cyclones in the world. An average of 20 tropical cyclones per year occur, especially between July and October, with 8-9 of these directly crossing the archipelago. In addition, it is subject to the El Nino phenomena

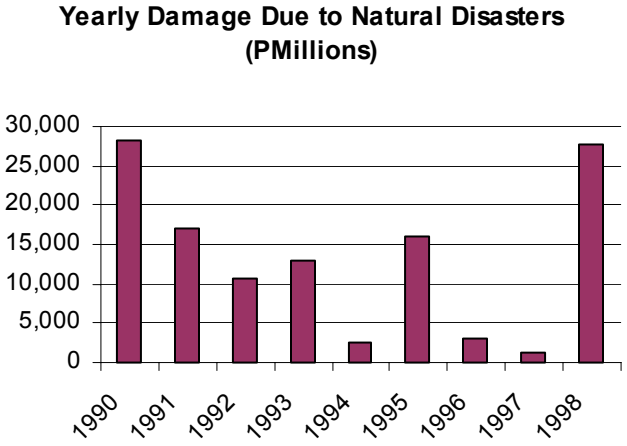
[6] The densities of cities in NCR range from 8,122 (Marikina) to 88,616 (Navotas)
[7] NFPP, 2000. The sections on climate and crop patterns are likewise taken from this document.

occurring every three to six years and lasting 18 months (for instance in 1992-1993, which actually persisted until early 1995, and again in 1997-1998). This causes dry spells, forest fires or drought to many parts of the country. Provinces with climate types 1 and 3 are highly vulnerable to El Nino's effects.

Despite attempts at disaster preparedness and mitigation, the regular onslaught of typhoons, drought, earthquakes and volcanic activity causes significant damage to people and livelihoods. The 1997-1998 El Nino alone cost Ps 7.76 billion in agricultural output while typhoons caused damage to the tune of Ps 13.3 billion per year over the last decade.

Annex 1, Map 4: Climate types
Annex 1, Map 5: Typhoon Frequency

Figure 1:



Topography, climate and weather patterns, among others, combine to determine land use and land capability, crop production patterns, housing patterns and disease burden. For instance, land resources are categorized into "development clusters" – production, expansion, rehabilitation or conservation zones - based on present land use, surface gradient, state of degradation and other physical aspects [8]; agricultural lands (which account for 34% of country's total land area) are further classified into pedo-ecological zones distinguished by slope, elevation and temperature. [9] Building construction and housing are also undertaken with natural disasters in mind: most rural housing, especially those along the eastern coast, are built to "collapse" so to speak: they are built with nipa so that while they are easily damaged by typhoons, they are just as easily replaced.

[8] Production Zone and Expansion Zone are lands currently for agricultural production or with great potential for it; Rehabilitation Zone, generally uplands and critical watershed areas whose productivity is severely downgraded; and Conservation Zone, generally lands that are performing functions of environmental enhancement. A last cluster includes other areas, including built-up areas.

[9] NFPP, 2000. These are warm lowland (<8% slope, <100 m. elevation, > 25 C), warm cool upland (<18% slope, 100-500 elevation, 22.5-25C, OR 8-18% slope, <100 m. elevation, >25C), warm-cool hilly land (8-18% slope, <100m elevation, >25C) and cool highland (>500 m. elevation, <22.5C). 45% of agricultural lands in the Philippines are in the lowlands, 33% in the uplands, 16% in hilly lands, and 6% in highlands.

Commercial buildings are steel and concrete structures intended to resist both typhoons and earthquakes.

As regards disease burden [10], topography is a factor. For instance, malaria is endemic to rural, hilly or mountainous, and hard to reach areas. High-risk groups include upland subsistence farmers, forest related workers, indigenous peoples, and settlers in frontier areas, migrant agricultural workers and soldiers assigned in endemic areas. Twenty-two (22) provinces are classified as highly endemic accounting for 80% of cases reported between 1992-1998.

On the other hand, rainfall patterns, particularly of climate types 2 and 4, have a hand in the endemicity of schistosomiasis. Affecting 1212 barangays in 24 provinces [11], 1.8 million people are directly exposed and a total of 6.7 million are at-risk. The significance of schistosomiasis is that its primary victims are the rural poor: farmers and freshwater fishermen, for instance, have the highest prevalence of the disease since their sources of livelihood and work areas are the foci of disease transmission. The disease could hinder the productivity, income and upward socioeconomic mobility of this sector.

Annex 1, Map 7: Malaria and Schistosomiasis (see also Map 20)

Ethnicity and social conflict. Filipinos are principally a blend of Malay, Chinese, Spanish, Negrito, and American stock and can be organized into at least three major groupings: the Christianized groups, constituting more than 90%, found mainly in the lowlands and the coastal areas of the archipelago; the Islamized or Muslim-influenced groups, constituting less than 10%, found in the Sulu archipelago and southwestern Mindanao; and the indigenous peoples or cultural communities, who inhabit the hilly and mountainous interiors of a number of major islands.

Further, there are at least fifty-one major ethno linguistic groups in the country. [12] Nonetheless, social cleavages seem to be founded primarily on socio-cultural (upland tribes versus lowlanders), socio-political (Muslims versus lowland Christians), and economic (land tenure) differences rather than ethnic or racial ones. [13] We discuss these below.

Annex 1, Map 8: Indigenous People and Islamized Groups

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10 National Objectives on Health (NOH), 2000.
11 Three provinces are highly endemic - Maguindanao with a rate of 18.91 percent, followed by Agusan del Sur and Lanao del Norte. Two provinces, Surigao del Norte and Oriental Mindoro, are classified as moderately endemic, while the rest have low endemicity. Among the 10 endemic regions, only ARMM is classified as highly endemic with a prevalence rate of 12.8 percent.
12 CCP, 1994. The Summer Institutes of Languages estimated 171 different languages in the Philippines, 3 of which were extinct. The same number represents the number of cultural entities that speak these languages.
13 Azama, 1985.

Indigenous People (IP's). [14] The dichotomy between the 'assimilated majority' and the 'unassimilated minority', or the IP's, began during the Spanish era, when natives in the mountains as well as those who retreated to the hinterlands put up a strong resistance against the colonizers and were labeled as *infidels, pagans* and *barbarians*. The "assimilated" natives soon internalized this prejudice.

Today, the Philippines is the only country in Asia that has officially used the term "indigenous people" and recognized their rights as such. The Indigenous People's Act (IPRA) of 1997 defines indigenous people as follows:

> *A group of people or homogeneous societies identified by self-ascription and ascription by others, who have continuously lived as organized community on communally bounded and defined territory, and who have, under claims of ownership since time immemorial, occupied, possessed and utilized such territories, sharing common bonds of language, customs, traditions and other distinctive cultural traits, or who have, through resistance to political, social and cultural inroads of colonization, non-indigenous religions and cultures, become historically differentiated from the majority of Filipinos. ICCs/IPs shall likewise include peoples who are regarded as indigenous on account of their descent from the populations which inhabited the country, at the time of conquest or colonization, or at the time of inroads of non-indigenous religions and cultures, or the establishment of present state boundaries, who retain some or all of their own social, economic, cultural and political institutions, but who may have been displaced from their traditional domains or who may have resettled outside their ancestral domains.* IPRA, Chapter II, Section 3h).

Historical continuity, self-identification and group membership are inherent in this definition, with the IP's attachment to land and territory – the *ancestral domain* - underlying all factors. The IP's customary concepts and practices of land use and ownership embody the basic rule of collectivism where the notion of private ownership by one or a few is alien. Unfortunately, until the IPRA, state policy contradicted and even denied the customary concepts of collectivism.[15] The "Regalian Doctrine" introduced by the Spanish colonizers and retained by the Americans, decreed that all lands belonged to the King and could not be alienated. Under the Americans, laws such as the Land Registration Act of 1902 and Philippine Commission Act No. 178 of 1903 [16], the Mining Law of 1905 [17], and especially the Public Land Acts of 1913, 1919, and 1925 [18], reinforced state control and effectively denied IPs their customary land use and

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[14] This section based on the ADB report "Indigenous People/Ethnic Minorities and Poverty Reduction in the Philippines", June 2002.

[15] For this reason, IPs in the Philippines are said to be a creation of history (ADB, 2000)..

[16] Which ordered that all unregistered lands become part of the public domain, and that only the State had the authority to classify or exploit the same

[17] Which gave the Americans the right to acquire public land for mining purposes

[18] Through which Mindanao and all other areas of fertile lands that the State considered unoccupied, unreserved, or otherwise unappropriated public lands became available to homesteaders and corporations, despite the fact that the indigenous peoples were in these lands,

ownership, displacing them in their own lands. The 1935 Philippine Constitution continued to embody these concepts and gave rise to other such laws as the Revised Forestry Code of 1975, which further delimited landownership among indigenous peoples, so that even ownership of famous rice terraces of the indigenous peoples of the Cordillera became questionable.[19]

In 1989, the estimated population of IPs was about 11 million, with the majority, 58%, in Mindanao, 41% in Luzon, and 1% in the Visayas. Provinces in the Cordillera region have the highest concentration of IP's in the country.

Annex 1, Map 9: Concentration of Indigenous People Per Province

Moro secessionists. The Muslim-Christian or, more accurately, the **Moro**-Christian divide, is a second social conflict, armed, and possibly the most deeply rooted. Notwithstanding the terminology, it is not a religious struggle but a **political** one, rooted in a struggle for justice; hence the use of "Moro" rather than "Muslim":

> "The terms Muslim and Moro have been used interchangeably to refer to those people who have adopted Islam as a religion and a way of life. However, Muslim refers to a universal religious identity, while Moro denotes a political identity distinct to the Islamized peoples of Mindanao and Sulu." (ADB 2002)

Moro insurgent movements date back to Spanish rule when the Muslim population of southwestern Mindanao and the Sulu Archipelago (i.e. today's Region 9, 12 and ARMM) strongly resisted colonization. More immediate causes of insurgency rose out during the late 1960s, with the immigration of Christians from the north to the south, their "homesteading" or occupation of traditional Muslim land, and their consequent control of market centers. Things came to a head in 1968 and the Moro National Liberation Front (MNLF) was formed, an anti-colonial, anti-elite, distinctly Islamic movement rooted in a struggle for justice [20]. The *Bangsamoro,* as they were known, fought for self-determination through an independent Moro nation and reached its peak in 1973-75 with some 30,000 armed fighters.

In 1976, the *Tripoli Agreement* was signed between the government and the MNLF that in principle provided for Muslim autonomy for 13 provinces and 11 cities of Mindanao. This became the basis for the ARMM Law, finally enacted in 1989, and the ARMM region itself, albeit a much smaller version, established in 1996.[21] However in agreeing to "autonomy" rather than "independence", the MNLF leadership was questioned and a

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[19] This decree stated "no lands of the public domain with a slope of 18% or more shall be classified as alienable and disposable, nor any forest land 50% or more in slope, as grazing land. Lands 18% or more in slope that have already been declared as alienable and disposable shall be reverted to the classification of forest lands… to form part of the forest reserve…that when public interest so requires, steps shall be taken to expropriate, cancel effective titles, reject public land applications, or reject occupants thereof."

[20] ADB, 2002.

[21] Only four provinces out of the intended 13 agreed to be part of ARMM during a referendum to ratify the law. These results were disputed by the MNLF, who then withdrew from the peace process in protest. They returned to the table only in 1995.

break-away group, the Moro Islamic Liberation Front (MILF), was formed in 1984. The MILF advocated, and continues to advocate, a more exclusive, Islam-framed definition of Moro nationalism and is what remains of the secessionist movement today. Peace talks between the government and MILF started only in January 1997.

Annex 1, Map 10: Moro Contested Areas

Communist Insurgency. A final arena of conflict – the communist insurgency – has its roots in the peasant-armed rebellions of the early 1900s. Driven primarily by land tenure issues, early communist and socialist groups coalesced in the late 1930s and became the anti-Japanese guerilla movement *Hukbung Bayan Laban sa Hapon* or the Huks in 1942. The Huks played a significant role in the liberation of Luzon, defending "democracy and the territorial rights of both the Philippines and the United States", but were later denounced by the Americans as subversive. In fact, the Huks were predominantly poor peasants fighting for reform rather than revolution, willing to "serve as tenants as long as landowners gave them easy credit, a fair share of the crop and protection against repression by the local authorities" and work through "the ballot and peaceful petition." [22] It was only in 1946, after the election of six Huk-supported candidates to the National Legislature was nullified, that a real Huk Rebellion – now the *Hukbong Magpapalaya ng Bayan* or People's Liberation Army – began. Lasting until 1954, the Huks had some 50,000 reservists at its peak in 1950.

In 1969, remnants of the Huk fighters formed the first units of the New People's Army (NPA), the military wing of a revived Communist Party of the Philippines or CPP led by Jose Maria Sison. By 1986-1987, the NPA had infiltrated about 20% of the 40,000 villages across the country – a scope of influence that then decreased to .01% of villages by 1995. [23]

Though nowhere near their original strength, the CPP-NPA continue their activities and claim a resurgence in membership. Both the Philippines and United States governments recently branded them as international terrorists.

Annex 1, Map 11: CPP-NPA affected areas

Political dynasties. Authors have described the Philippine political experience as "change in a changeless society", where powerful and elite groups have resisted change and political administration is treated as a personal affair. [24] In a study of the 1992-1995 9th House of Representatives (of 1992-1995), Gutierrez (1994) found that 145 out of 199 elected representatives or almost three-fourths were members of political families, attesting to the importance of the family in Philippine politics. It is argued that the family

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[22] Karnow, 1989. Their platform was hardly revolutionary. Taruc claimed that the alliance for the elections did not advocate "even the mildest socialization or change in the society" but aimed to develop "a healthy industrialized capitalist country out of the feudal agricultural condition".

[23] Armed Forces of the Philippines. Decrease in influence is attributed to the end of the 20-year Marcos dictatorship in 1986, the promulgation of an Agrarian Reform Law in 1987, and the dismantling of the US bases in 1991.

[24] Gutierrez (1994) reviewing the analysis of David Timberman, Paul Hutchcroft and other scholars.

is, more than the political party or machine, is the most significant political organization of the elite.

Political dynasties are prohibited by the 1987 Philippine Constitution (Art. 2, Sec. 26) though enabling legislation has yet to define them. In general, they are understood as a situation where two or more members of the same family, say within the 3rd or 4th degree of consanguinity or affinity, simultaneously occupy elective office with the same overlapping local constituency.[25] While dynasties are viewed as an impediment to local political development, their effect on economic development is harder to generalize. In theory, to the extent that rents for the political clan are created (by restricting competition in local markets and by leakages in the allocation and delivery of public goods to the poor), political dynasties hinder local economic development and poverty reduction. On the other hand, the divisive, patrimonial nature of Philippine politics may be such that political control by one family may be preferred if only to speed up consensus on a common vision, coordination of development projects and the allocation of resources.

To attempt a typology of political dynasties is beyond this paper. For our purposes and in view of available data, an admittedly crude definition is used to capture the extent of local dynasties in the 1990s, i.e. the proportion of elected provincial governors, vice-governors and representatives that are related by blood or marriage in 1998.[26]

Annex 1, Map 21: Provincial Dynasty Profile

III. Status and Trends: national and sub-national levels

This section discusses the status of the MDG after a decade of effort and the likelihood that national targets will be met by 2015.[27] Although subsequent sections of this report will focus on four HDI-related MDG targets, this section covers all targets listed mentioned in section 1 above.

Trends in human outcomes from 1990-2000 reflect events of the decade. Coming out of the tumultuous 1980's which saw a debt crisis in 1983, the toppling of a 20-year dictatorship through a people-power revolt in 1986, a series of military coups in 1987 and

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[25] For instance, a provincial governor and a district representative have overlapping constituencies. But two district representatives from one province would not have. A city mayor and a district representative from the same province would not have overlapping constituencies if the city is not within the congressional district.

[26] Following Balisacan and Pernia (2002). It is plausible to assume that political families who were in place in 1998 were there from 1992, having been elected during the Synchronized Elections in 1992 and re-elected in 1995 and 1998. There is a 3-term limit for these officials.

[27] Methodology is a slightly modified version of that found in Philippine Progress Report on the MDG (or PPRMDG), UNDP Manila, 2002. Specifically, we classify a target as **high** (highly likely) if it can be achieved using the same pace set between 1990-2000, i.e. if the *ratio of actual progress from 1990-2000 to required progress from 2001-2015*, or λ, is greater than or equal to unity ($\lambda \geq 1.0$); **fair**, if a pace up to 1 ½ times faster will be needed ($.67 \leq \lambda < 1.0$); and **low**, if a pace more than 1½ times faster will be required ($\lambda < .67$). The original PPRMDG method computed λ inversely, i.e. as the ratio of required to actual progress, and classified high as $\lambda < 1.5$, medium as $1.5 \leq \lambda \leq 2.0$, and low as $\lambda > 2$.

devastating natural calamities in 1989 and 1990, the first three-quarters of the 1990's were relatively 'peaceful', allowing notable gains for poverty reduction and human development. Two presidents – Corazon Aquino (1986-1992) and Fidel Ramos (1992-1998) – shepherded the integration of a social reform and human development-framework into the national development plan that helped reduce the incidence of income poverty from 49% in 1985 to 45.3% in 1991 to 37% in 1997. Things took a turn for the worse in the last quarter however, with the Asia-wide financial crisis in 1997, the El Nino weather phenomena in 1998, and yet another "people power" movement during the last quarter of 2000, such that income poverty ticked-up once more to 39.4% in 2000.

Of the MDG targets listed above, four have **high** prospects of being achieved by 2015 (e.g. access to safe water, elimination of gender disparities in education, halting the spread of HIV/AIDS, halting the incidence of malaria and other major diseases), five have **low** prospects (e.g. reducing *official* income poverty, reducing hunger, universal completion of primary education, reducing maternal mortality, increased access to reproductive health services), and one (reducing under-5's/infant mortality) has a **fair** prospect. With respect to reducing poverty however, if one monitors poverty using a more "spatially consistent" methodology rather than the official methodology (as explained below), the prospects for achieving the poverty target shifts from **low** to **high.**

For the following discussion, please refer to Maps found in Annex 1 and the breakdown of MDG indicators per province found in Annex 2. Annex 3 lists Top 15 and Bottom 15-performing provinces per target.

Target for 2015	Likelihood of achieving targets		
	H	M	L
1: Halve % people living in extreme poverty - Official methodology - Consistent methodology	/ /		
2: Halve % population below minimum level of dietary consumption and halve proportion of underweight under-5's			/
3: Halve % population with no access to safe water	/		
4: Universal access to and completion of (to 80%) of primary education			/
5: Eliminate gender disparities in all levels of education	/		
6: Reduce under 5's mortality by 2/3 - child - infant mortality by 2/3	 /	/ /	
7: Reduce maternal mortality by ¾			/
8: Increase access to basic reproductive health services to 100% by 2015 - % of births attended by skilled personnel - Contraceptive use		 /	/ /
9: Halt and reverse the spread of HIV/AIDS	/		
10: Halt and begin to reverse incidence of malaria and other major	/		

diseases			

Target 1, reducing income poverty from 45.3% in 1991 to 22.5% in 2015: The prospects for achieving this target is low. National income poverty decreased from 45.3% of the population in 1991 to 37% in 1997 only to go up again to 39.4% in 2000.[28] At this rate, the proportion of the population living below poverty line has to be reduced by 17 percentage points or double the rate registered (of 9.9%) over the 15 years from 1985-2000, to reach the 2015 target of 22.5 % poverty incidence.

Regional disparities are wide: from a low poverty incidence of 12.7% in the NCR to a high of 73.9% in the ARMM, 62.8% in Bicol, 57.9% in Central Mindanao (R12) and 53% in Western Mindanao (R9). Aside from NCR, only three other regions, all in Luzon, register a poverty incidence lower than the national average: Central Luzon (R3) at 22.9%, Southern Tagalog (R4) at 31.7% and the Cagayan Valley (R2) at 36.3%

Annex 1, Map 12: Poverty Incidence (official) 2000, ranked, by quintile
Annex 2, Sheet 4
Annex 3, Table 1

When poverty is measured using a more "consistent" methodology rather than the official methodology however, prospects change.[29] Poverty incidence moved from **34.3** percent in 1991 to 25.1 in 1997, and back up to **27.5** in 2000, making the likelihood **high** that the poverty **target of 17.2** percent will be met; thirteen (13) provinces have already reached their targets. Wide intra-regional disparities are noted however such as in Region 4, between mainland provinces adjacent to Metro Manila like Laguna (7.7%), Rizal (10.5%) and Cavite (10.9) and small island provinces off Luzon like Romblon (74.4%) and Marinduque (48.8). In Mindanao, provinces known as regional centers for trade seem to be outliers, e.g. Zamboanga Sur, Misamis Oriental, Davao Sur and South Cotabato, who have the most number of ports in their respective regions. On the other hand, three of the worse-off provinces – Sulu (92%), Tawi-Tawi (72.3%) and Basilan (63%) - are island provinces in Muslim Mindanao.

Poverty figures mentioned henceforth will that based on the **"consistent"** methodology.

Annex 1, Map 13: Consistent Poverty Incidence 2000, ranked, by quintile

[28] We quote 1991 poverty figures with caution however since provincial level estimates based on Family Income and Expenditure Surveys prior to 1997 are not statistically reliable.

[29] The official approach, which evaluates poverty using current income and representative food menus evaluated at local prices, tends to yield poverty lines that are not consistent, that is, the standard of living implied varies for each region as well as over time, e.g. estimates of food/non-food thresholds tend to be higher for the economically more progressive regions/areas than for the economically backward regions/areas. Moreover, food thresholds tend to rise with improvements in overall living standards. In short, if the policy objective is to reduce absolute poverty, then official lines employed for various regions and across time are not comparable. The "consistent" poverty lines, on the other hand, makes use of current consumption expenditure rather than current income as a broad indicator of household welfare and imposes consistency in the construction of absolute poverty lines, an approach resembling that of Ravallion, 1994. See Balisacan, 2001, for the construction of "consistent" poverty lines.

Annex 2, sheet 3
Annex 3, Table 2

Target 2, reducing hunger from 34.5% in 1989-90 to 17% in 2015: The prospect for achieving this is low. Based on International Reference Standards, the prevalence of moderately and severely underweight children under-5 years decreased from 34.5% in 1989-1990 to 30.8 % in 1996, but then went up again to 32% in 1998. Figures for stunted growth went from 40% in 1989-90 to 34.5% in 1996 and maintained at 34% in 1998. [30] External circumstances such as the 1997 financial crisis followed by the 1998 El Nino phenomena played a significant role in the deteriorating nutrition status during the latter part of the decade. [31]

Regional disparities are noted. Based on the NCHS/WHO Weight-for-Age classification, Western Visayas (R6) has the highest prevalence of underweight children, with nearly 40 in every 100 children being underweight for their age. Eastern Visayas (R8) has 38 underweight children in every 100, Bicol 37 (R5), Ilocos (R1) 36, Western Mindanao, CARAGA and Central Visayas (R7), 34 each. Regions with lower prevalence include NCR, Southern Tagalog, Central Luzon and CAR, all within the 26 - 27 range.

Annex 1, Map 14: Underweight Children 1998, ranked, by quintile
Annex 2, sheet 5
Annex 3, Table 3

Target 3, increasing access to safe water from 73.7% in 1991 to 87% in 2015: It is likely that this goal will be met. In 2000, access to safe water was already 78.5% with some regions already surpassing the 87% target. Disparities within regions exist nonetheless, such as in Region 4 between Cavite (3.4%) beside Metro Manila and Quezon (32.3%) fronting the east coast. However, disparities between regions are starker: ARMM in the south registers only a 30.6% access rate compared to a 97% rate in Central Luzon. Regions 5, 6 and 9 register between 50 – 70%. The difference extends to the whole mainland Luzon versus Mindanao: of the 15 worse-off provinces, nine are in Mindanao; of the top fifteen provinces, thirteen are in Mainland Luzon.

Annex 1, Map 15: No Safe Water 2000, ranked, by quintile
Annex 2, sheet 6
Annex 3, Table 4

T**arget 4, Universal completion (to 80%) of a full course of primary education.** The prospects for this target is low**.** While participation rates in elementary education for both public and private schools have significantly increased from 85% in 1991 to 97.02% in 2000, the "quality" of education remains a problem: cohort survival rates remained at 68.4% to 69.3% in the same period. Moreover, disparities suggest geographic, cultural

[30] Food and Nutrition Research Institute, 1998.
[31] Department of Health and MIMAP, 1999.

and economic barriers to improved access and quality of education. The most obvious example is in Mindanao where of the 22 provinces in Mindanao, only five (5) have high prospects of reaching the MDG; the rest have low prospects or are in fact getting worse. Of the worst 5 provinces, four are from the ARMM region and one from Region 9. Of the worst 15, all provinces of ARMM and Region 9 are included.

Annex 1, Map 16: Cohort Survival 2000, ranked, by quintile
Annex 2, sheet 7
Annex 3, Table 5

Target 5, eliminate gender disparities in all levels of education. The prospect for this target is high. As it is, girls have near equal or higher participation rates than boys in the elementary school level (96: 100 in SY 2000-2001) and secondary levels (105:100). Moreover, women tend to have higher survival rates in school, with a greater number going forward to secondary and tertiary education. Literacy rates as of 1994 likewise show women (94%) having an edge over men (93.7%). [32]

Annex 2: sheet 8-9

Target 6, reduce infant mortality and under-5 mortality rates by 2/3 from 80 in 1990 to 27 in 2015. The prospect for this target is high. Under-5 mortality rates were significantly reduced from 80 in 1990 to 67 in 1995 while infant mortality rates from 57 in 1990 to 49 in 1995 - both achievements exceeding 2000 targets. On a provincial level, we see that, again, all provinces in Region 3 and in Region 4 surrounding Metro Manila are in the top 15 performing provinces. On the other hand, the Samar provinces in Region 8 and all ARMM provinces in Mindanao are among the worse-15 performing provinces.

Annex 1, Map 17: Infant Mortality 1995, ranked, by quintile
Annex 2, sheet 10-11
Annex 3, Table 6

Target 7, reduce maternal mortality by half by 2000 (from 209 per 100,000 live births in 1993 to 105 in 2000) and by ¾ to 52 in 2015. The prospect for this target is fair. Maternal mortality was 180 per 100,000 live births in 1995, making the first milestone in 2000 unattainable. Once again, the ARMM/western Mindanao (R9) provinces lead in highest maternal mortality rates**.** [33]

Annex 1, Map 18: Maternal Mortality 1995, ranked, by quintile

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[32] The disparity in education outcomes between women across levels of income or urbanity rather than between women and men per se may merit greater concern. For instance, literacy rates of urban women were 15 percentage points higher than that of rural women in 1994 (or 83.9% to 68.8% respectively.)

[33] Unfortunately, there seems to be a problem with the maternal mortality data released by the Department of Health. There are not a few cases where reports for provinces/cities are either unavailable or incomplete. For instance in 1993, with the exception of Lanao Sur, no province in ARMM was reported. For this reason, the figures on maternal mortality in Annex 2 should be read with caution.

Annex 2, sheet 12
Annex 3, Table 7

Target 8, increased access to reproductive health services to 100% by 2015. The prospect of this target is low. Ten women die everyday from pregnancy and childbirth-related causes and most of the maternal complications and deaths are due to limited access to reproductive health services[34] : only 77% of mothers receive a minimum three pre-natal checkups (of which almost half are performed during the first trimester), 57% receive iodine, 33% receive tetanus toxoid immunization, 56% of all deliveries are attended by health professionals, and only 57% receive post-partum care. As to family planning services, data generally shows patterns of increasing contraceptive use and declining fertility. However while the unmet need for family planning services has also declined, rates of contraceptive discontinuation are high (about 40 percent of contraceptive users stop using within 12 months.) Finally, regional differentials in current use of family planning are large, ranging from 16 percent of married women in ARMM to 55 percent of those in Southern Mindanao (R11) and Central Luzon (R3). This may be correlated with level of education.

Annex 1, Map 19: Live births attended by skilled personnel 1999, ranked, by quintile
Annex 2, sheet 13
Annex 3, Table 8

Target 9, reverse the spread of HIV/AIDS. The prospect for this target is high. International experts consider the situation in the country as a "nascent epidemic" due to the very low total number of confirmed cases and its slow rate of increase. The official number of recorded HIV ab seropositive cases is 1611 since 1984 and the annual number of confirmed cases has not exceeded 200 from 1993-1999. And while Philippine epidemiologists estimate the actual number of HIV cases at 5000-13000, the current HIV prevalence rate is at most 0.02% of total population. Female sex workers, men who have sex with men and intravenous drug users have higher than average prevalence rates.

Target 10, halt and begin to reverse the incidence of malaria and other diseases. The prospects for this target are high. Malaria is no longer a leading cause of death in the country though it is still a leading cause of morbidity. Morbidity has fallen from 123 cases per 100,000 in 1990 to 73 cases per 100,000 population in 1998; mortality, from 1.5 to 0.9 deaths per 100,000 population.

Spatial disparities are observed. As mentioned earlier, twenty-two (22) provinces are classified as highly endemic accounting for 80% of cases reported between 1992-1998. These provinces include the Cordillera provinces in the north, the Davao and Agusan area in southeast Mindanao, and Zamboanga to Tawi-Tawi in the west. On the other hand, thirteen (13) provinces, including Metro Manila, are malaria free. The rest are moderately endemic (25), accounting for 11% of cases, and low endemic (18), accounting for 1% of cases. People at risk in malaria endemic areas total about 10.8 million.

[34] National Demographic and Health Survey, 1998.

With respect to tuberculosis, it is still the fifth leading cause of death and 6th leading cause of morbidity in 1995. Mortality rates have decreased from 69 deaths per 100,000 population in 1975 to 39 deaths per 100,000 in 1995; morbidity from 314 cases to 173 cases per 100,000 population over the same time period. About 100,000 new TB cases develop yearly however, with twice more cases in urban than in rural areas.

Annex 1, Map 20: Malaria Endemicity in IP Areas
Annex 2, sheet 14

To sum up, the country seems to be on track in achieving the MDGs related to poverty, infant mortality, the control of major diseases, access to safe water and gender equity in education. However it will be unlikely that targets related to universal completion of primary education, access to reproductive health services and maternal mortality would be achieved.

Provincial and regional level disparities are masked by national averages however. For instance, Mindanao provinces are clearly behind in poverty, infant mortality and education outcomes, particularly provinces in the ARMM region and other Moro-contested areas, notwithstanding overall national performance. Small island provinces are lagging in poverty outcomes and while those in the Visayas and on the eastern seaboard, such as the Samar and Bicol provinces, are also notably behind in child health outcomes. On the other hand, a handful of provinces are outliers in Mindanao, doing a little better than the rest, such as those in more moderate climate and typhoon zones (e.g. in Davao Sur and South Cotabato in the south) as well as those known as regional centers for trade (e.g. with the largest number of commercial ports). Provinces on the Luzon mainland, particularly those adjacent to Metro Manila, also seem to enjoy better outcomes on all counts.

IV. Geographical correlates of sub-national MDG outcomes

Gallup and Sachs (1998) examine geographical correlates of economic development across one-hundred fifty countries and find that variables related to transport costs, ecological conditions, and coastal access as well as openness and quality of public institutions are important in explaining per capita income levels. In turn, Balisacan and Pernia (2002) study the evolution of per capita expenditures across provinces of the Philippines during the 1980s and 1990s and find that (lack of) coastal access, frequency of typhoons and the quality of local politics, among others, help explain welfare levels of the poor. [35]

[35] Balisacan and Pernia's panel of province-level data was constructed from the Family Income and Expenditure Survey (FIES) for 1985, 1988, 1991, 1994 and 1997. However, this approach may be questioned since the FIES sampling frame was not designed for provincial-level estimates until 1997.

Owing to the absence of valid provincial expenditure data prior to 1997, we take a simple approach. We examine geographic and political factors in relation to current levels of poverty incidence, per capita income, adjusted cohort survival rates and infant mortality. Following Gallup and Sachs, factors are grouped into (1) those which relate to the natural environment or ecology of an area, (2) those which relate to transport costs and access to external markets, and (3) other political economy variables. We begin with poverty incidence and per capita income in 2000 as variables to be explained, examining each category of factors and then combining them into a full model. We then apply the same model to infant mortality and primary education completion rates – and, to complete the picture, to underweight and access to water indicators. A description of the data is found in Annex 4 while all regression results are in Annex 5.

Intrinsic ecological factors (Models 1a and 1b)

Geographic factors such as climate, topography and frequency of natural calamities have a bearing on living conditions, human security and, therefore, on human capabilities and productivity. As discussed earlier, food production (crop patters and productivity), shelter and livelihood patterns are largely contingent on climate and topography; likewise for disease burdens and human health. In general, one would expect that the more severe the environment – the more volatile the climate or the less productive the terrain - the more difficult to maintain or improve standards of living.

The four climate types represent climate, while 'typhoons' is by frequency. Although typhoons influence climate conditions greatly, the two are not perfectly correlated as the latter captures an overall distribution of rainfall. For the topography variable, we use the (proportion of) land area classified as rehabilitation or conservation zones, or lands generally unsuitable for agricultural production or urban uses. Classification is based on slope and other physical attributes.

Results

For both poverty incidence and per capita income, **climate** is very significant. Relative to provinces with type 1 climate (such as Metro Manila, Region 1, Region 3, Cavite and Batangas), provinces with climate types 2 and 3 – such as in CAR, R2, CARAGA, and parts of R5 and R8 - are likely to register a poverty incidence 20 percentage point more; those with type 4 – parts of R5, R8, R9 and south-east Mindanao – an incidence 26 percentage point more. Similarly for per capita income: provinces with types 2, 3 or 4 will likely have a lower per capita income by Ps 6,600 to 9,200 relative to provinces with type 1.

A high frequency of **typhoons** turns out to be insignificant for both poverty and per capita income. What this says is that although typhoons may cause more visible damage to crops and property when they occur, overall climate conditions may be the more important concern.

The proportion of land area classified for rehabilitation and conservation, or re is not significant in either case. [36]

Access/proximity variables (Model 2a and 2b)

The quality of links to external markets is another route by which geographical factors may affect local outcomes. To the extent that geographical conditions facilitate access to goods and services, mobility, or enables, say, agglomeration economies, local standards of living can improve. For example, the greater the distance to commercial centers, the greater the costs of trade and services and the lower living standards. On the other hand, the advantages of external access may be not be leveraged if the local economy is poorly integrated; that is, if these benefits cannot be distributed properly within the local economy. Thus the more dispersed or isolated a sub-population (say, from the provincial commercial capital), the less efficient the distribution or diffusion of goods, services and technologies.

A note on coastal access. Gallup and Sachs (1998) find that coastal access, for reasons of lower transport costs and higher intrinsic productivity, presents a clear advantage for development relative to the hinterlands or landlocked areas. Balisacan and Pernia (2002) too find that landlocked areas have lower welfare levels. It is possible however that, for an archipelago like the Philippines, *proximity* to the coast per se (or the disadvantage of being landlocked) may not translate to more effective coastal *access*. For instance, variable marine conditions for a good number of months may counteract any advantage for coastal populations, e.g. by rendering coastal areas hazardous or sea-based trade irregular. Also, flawed domestic shipping regulations have in fact disproportionately hurt agricultural producers and traders and have made the country's shipping and handling costs higher than other countries in the region.[37]

We use seven variables to capture the quality of access to external markets and services. The first three capture cost of access: 1) distance to Metro Manila using national road and sea routes; 2) the number of operational commercial seaports, which will represent *effective* coastal access; and 3) a dummy variable for the presence of a major international air/sea port of entry. We expect distance from Metro Manila to have a negative effect on poverty, per capita income, health and education, and the number of ports to have a positive effect on poverty and per capita income. As mentioned earlier, Metro Manila is both the commercial and political center of the country. It is the location of the country's main international airport and seaport, accounting for 67% of total foreign trade flows from ports in 1990. Local governments are still highly dependent on budget transfers from the National Government in Metro Manila.

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[36] We also used slope as the topography variable and found that having a larger share of land on the highlands (slopes 30° and higher) and warm/cool uplands (slopes 8-18°) lowers per capita income relative to provinces which are predominantly lowland (slopes less than 8°). It is not significant for poverty however.

[37] Austria, 2002.

The next four variables try to capture local integration: 4) population density, 5) proportion of population living near (i.e. within 2 municipalities) the provincial commercial capital [38], 6) proportion of inland population, i.e. those not living in a coastal city or municipality, and 7) road density. We expect the first two to have a positive effect on all outcomes; the same is expected of the last variable. For inland population, a negative effect is normally expected, i.e. in line with arguments that favor coastal access. However, given the distinction between proximity and access mentioned above, a positive effect should show up.

Results

For both poverty incidence and per capita income, we find that **distance from Metro Manila,** number of **commercial ports** and proportion of **inland population** are significant and with the correct sign: the farther from Metro Manila, the greater the poverty incidence and lower the per capita income, while the greater the number of commercial ports and the larger the population inland, the lower the poverty and higher per capita income. The combination of the latter two variables indicates that proximity to the coast per se is not an advantage.

In addition, we find that **road density** is correlated with greater per capita incomes. This indicates that together with physical geography, infrastructure that facilitates mobility and integration counts as well.

Political economy variables (Model 3a and 3b)

Roads and ports may be interpreted as infrastructure policy variables. However, here we are concerned for the quality of public institutions and the effect of social and/or armed conflicts.

The quality of public institutions is represented by 1) the extent of local political dynasties, capturing the extent of collusion in local politics, and 2) per capita national government transfers for education. A local dynasty is defined as the proportion of elected provincial officials (governor, vice-governor and representatives) related to each other by blood or marriage and is expected to have a negative effect on the efficient operation of markets and on the delivery of public goods. National government transfers, on the other hand, will represent the efficacy of national government interventions; larger national transfers would be expected for provinces lagging in outcomes. Unlike other social services, the public sector budget for basic education remains centralized.

Social and/or armed conflicts are represented by 1) the concentration of IP population per province; 2) a dummy variable for Moro-contested areas and 3) the breadth of CPP-NPA influence per province. Poorer outcomes are expected for provinces with larger concentrations of IPs since IPs who have lost access to their land and other assets, or those whose livelihoods have been disrupted due to mining and logging activities, are likely to "bear the burden of material poverty as well as socio-cultural deprivation". Unfortunately, the quality of data on hand may not allow a reliable examination: the

[38] For "urbanizing" population. Reasons for not using actual estimates are indicated in footnote 4.

National Commission on Indigenous People (NCIP) figures for 1989 and 1996 are equal and the IP population indicated for a few provinces is implausible. [39]

With respect to the CPP-NPA variable, we use 1988 data on number of villages per province influenced or infiltrated by the CPP-NPA[40]. On the one hand, it is expected that widespread influence will be associated with stunted development later on, i.e. the defense department claims that the communist insurgency has "for years stunted the development of the countryside and cost the country so much in terms of development opportunities and potentials." On the other hand, because the strength of the CPP-NPA decreased steeply in the early 1990s, their former presence may have become inconsequential for 2000 outcomes.

Results
Although the equation poorly explains provincial variations, in both cases the **Moro** variable is significant and with the correct sign. The CPP-NPA, Dynasty and National Government variables also have the correct sign but are not significant. On the other hand, the IP variable is significant but with the "wrong" sign. This last result may be due to the quality of the IP data. In the full models that follow, a regional dummy variable for the Cordillera Region will better capture the IP factor.

All geographical/political correlates (Model 4a and 4b)

We combine all factors – ecological, market access and political - into a single model. We augment this with dummy variables representing fairly contiguous or "homogenous" regional clusters: Luzon 2, for the Cordillera region; Luzon 3, for the island provinces of Region 4 and Region 5; Mindanao 1, for the former Muslim Mindanao (or R9, R12 and ARMM); Mindanao 2, for the rest of Mindanao; and the Visayas (See Annex 1, Map 22). Based on the broad MDG patterns observed earlier, we anticipate Mindanao 1 to be correlated with high poverty, low per capita income and high infant mortality, and both Mindanao variables to be correlated with poor education achievements. Luzon 3, which includes the island provinces of Luzon, may also show higher poverty and lower per capita incomes. We also expect the Visayas variable to have be correlated with poor nutrition outcomes.

Results for poverty and per capita income are as follows:

1. For both poverty and per capita income, **climate matters.** Poverty incidence for provinces in climates 2, 3 and 4 can be greater by as much as 13 – 17 percentage points. Likewise, per capita income in provinces under climate 3 and 4 can be less by P3800.

[39] In a two provinces, the IP population is greater than total population. In Lanao Sur , the percentage is zero.
[40] Actual number of armed insurgents is classified data.

2. The quality of local public institutions, that is, **local political dynasties,** also matters. Greater collusion among provincial officials is correlated with higher poverty incidence and lower per capita incomes.

3. Variables for **Luzon 2** or the Cordilleras**, Mindanao 1** and **Luzon 3** show up strongly significant for both poverty and per capita income: incidence is greater in these clusters by 34, 27 and 16 percentage points respectively, while per capita incomes lower by P6300, P11300 and P4000 respectively. That the disparity in poverty incidence is greatest for the Cordilleras and Mindanao 1 should be noted. The IP factor, including the unique governance structure of the Cordillera "administrative" region, may help explain the former's poor showing.[41] As for the latter, while the Moro variable exhibits an odd result [42], the same political economy reasons most likely underlie the results for Mindanao 1, the former Muslim Mindanao.

4. The results for Luzon 3 confirm the disadvantages of island provinces off the Luzon mainland, or conversely, the location advantages of provinces adjacent to the Metro Manila.

5. The population variables, i.e. **density, inland population** and **population near the capital**, show up strongly for both poverty and per capita income (except for population near capital.) Their effect is positive, that is, higher values for each are correlated with lower poverty incidence and higher per capita incomes. The greater proportion near the capital, i.e. a greater 'urbanizing' population, may matter more for the distribution rather than for the level of per capita incomes.

6. **Commercial ports** remain significant and correlated with lower poverty incidence and higher per capita income.

Moving to other MDG outcomes:

Infant Mortality (Model 5)

- For infant mortality, **all climate** variables are significant and positive indicating the strong correlation between health outcomes and climate. Infant mortality increases by 5, 4 and 4 per 1000 births as one moves from climate 2, 3 and 4, relative to climate 1.

[41] We interpret Luzon 2 or the Cordillera variable as a good indication of the IP factors in view the poor state of national IP data.

[42] The odd results of the Moro variable may be due interaction effects with the Mindanao 1 variable (three provinces differentiate the Moro variable and Mindanao 1) and/or Dynasty variable (where highest degree of dynasty is found in an ARMM province.) This same odd result will show up in the infant mortality and safe water regressions. In any case, Mindanao 1 may be interpreted as predominantly Moro-contested areas.

- Having a greater proportion of rehabilitation and conservation lands is also highly correlated with higher infant mortality rates. Again, this reflects the strong correlation between health and **topography**, i.e. most likely through disease burden patterns (see footnote 10).

- While political dynasty is not significant**, Mindanao 1** continues to be significant and positive.[43] **Luzon 2** is also significant. They register 14 and 8 more deaths per 1,000 births respectively.

- The number of commercial **ports** and the proportion of **inland population** is significant. Lower costs of external access and greater proximity are correlated with lower infant mortality rates.

- Finally**,** the **national government** variable is significant. Higher national transfers are correlated with higher infant mortality rates. Given the distributional role of the national government, this is expected.

Primary education completion rates *(*Model 6.1 and 6.2)

Primary education completion rates are simply cohort survival rates adjusted for participation rates. Regressing against the same geographical and policy variables (model 6.1) results in the following:

- As was the case for all previous models, **Mindanao 1** is again significant. Completion rates are lower by about 23 percentage points in the former Muslim Mindanao[44]. In addition, **Mindanao 2** is significant, e.g. primary completion rates are lower by 17 percentage points in other parts of Mindanao. This means the **whole of Mindanao** has significantly lower primary education completion rates than the rest of the country.

- **Luzon 2** is also significant again, as in all previous models. Completion rates are relatively lower in the Cordilleras by 12 percentage points.

- **Political dynasty** is significant. This may confirm the view that political collusion hinders the efficient delivery of public services.

- **Road density** is significant and positive: a greater road density is correlated with higher completion rates. This reflects other findings, i.e. from Balisacan (2002), that complementarities are important and that returns to schooling are dependent on the availability of complementary factors such as roads. Also, a higher

[43] The Moro variable is significant but with the wrong sign. See footnote 42.
[44] The disadvantage of Muslim Mindanao remains even when we remove regional dummy variables (model 6.2). This time it shows itself in the Moro variable that is statistically significant and negative by 6 percentage points.

proportion of **population near the capital** is correlated with higher completion rates. This further highlights the importance of greater proximity to services.

- **F**inally one **climate** variable is significant. Provinces subject to climate 3 have lower completion rates relative to others.

Underweight Under 5's (Model 7) and **Access to Safe Water** (Model 8)

Relative to the preceding models, the explanatory power of these equations is poor. The HDI-related outcomes above measure average *achievement*; in contrast, these indicators measure *deprivation* in living standards or in economic provisioning. Perhaps variables that capture the effect of external shocks [45] and the quality of public goods and services would have better explained provincial variations.

Nonetheless, some earlier observations are confirmed:

- **Mindanao 1** is again statistically significant in both cases. [46] Households in these provinces have far less access to safe water (by 33 percentage points) and have more underweight children under age 5.

- As anticipated, **Visayas** provinces have statistically significant higher malnutrition rates for children under age 5.

- **Road density** has positive effect on the child nutrition as it did on primary school completion rates. A greater road density decreases the percentage of underweight children under 5.

In sum, <u>for the health and education outcomes</u> we see:

1. **Climate** and **topography** come into play for the health variable, as was the case for poverty and per capita income. In general, having a less or no distinct dry season or a greater proportion of rehabilitation and conservation lands – generally those upland and highlands – is worse for infant survival. (Climate also matters for primary completion rates.)

2. **Provincial political dynasties** are not good for the provision of public goods related to primary education. Their effect is likewise negative but not statistically significant on infant survival rates.

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[45] As mentioned earlier, external circumstances such as the 1997 financial crisis followed by the 1998 El Nino phenomena played a significant role in the deteriorating nutrition status during the latter part of the decade.

[46] For access to safe water, the Moro variable again exhibits an odd result. See footnote 42.

3. Provinces in **Mindanao 1** or the former Muslim Mindanao are strongly disadvantaged in all outcomes - by as much as 23 percentage points for primary education completion and 13 more infant deaths. Provinces in the **Cordillera region** are likewise disadvantaged. These results mirror what was found for poverty and per capita income.

4. Primary education completion rates are significantly lower for the **whole of Mindanao** while numbers of underweight children under age five are significantly higher for provinces in the Visayas.

5. **Road density** and **commercial ports** matter for primary education and infant mortality outcomes respectively. The greater the road density, the higher the education completion rates (and the lower the under 5 underweight rates); the more numerous the ports, the higher the infant survival rates.

Table 1: Summary of Results

	Poverty		Per cap income		Infant Mort		Prim Educ.		Underweight U5		No safe H2O	
Variables	*Coeff*	*p-val*	*Coeff*	*p-val*	*Coeff*	*p-val*	*Coeff*	*p-val*	*Coef*	*p-val*	*Coeff*	*p-val*
Climate 2	12.78	0.03	-3204.85	0.22	4.55	0.10	-3.34	0.51	0.52	0.77	0.16	0.99
Climate 3	15.02	0.00	-3810.78	0.03	3.86	0.03	-5.89	0.08	-0.72	0.52	7.34	0.21
Climate 4	16.97	0.00	-3775.79	0.08	3.92	0.09	-2.98	0.48	-1.44	0.32	5.12	0.49
Typhoons	-1.63	0.80	1025.75	0.72	-1.00	0.74	-0.57	0.92	1.19	0.54	9.24	0.36
RehZones	-0.08	0.43	37.25	0.40	0.08	0.08	-0.11	0.19	0.04	0.21	-0.07	0.64
Dist Manila	0.00	0.79	0.51	0.89	0.00	0.97	0.00	0.82	0.00	0.93	0.02	0.16
Roads	5.82	0.34	2094.73	0.44	-4.32	0.13	14.76	0.01	-3.81	0.04	-14.3	0.13
Ports	-0.37	0.00	130.07	0.02	-0.18	0.00	-0.02	0.87	0.04	0.33	-0.15	0.44
Intl Port	4.65	0.38	-3815.97	0.11	-1.34	0.59	-1.24	0.79	-1.64	0.30	3.08	0.71
Pop Density	-0.02	0.05	9.41	0.06	0.00	0.35	0.01	0.57	0.00	0.72	0.01	0.76
Pop Capital	-13.46	0.04	2018.61	0.47	-2.44	0.41	10.67	0.06	-2.02	0.28	-10.8	0.27
Pop Inland	-0.14	0.01	40.95	0.08	-0.04	0.08	0.02	0.66	0.03	0.07	-0.07	0.40
IPs [47]	-0.24	0.00	66.02	0.07	-0.04	0.32	0.03	0.65	0.00	0.90	-0.02	0.90
Moro [48]	-9.21	0.16	5900.59	0.04	-6.79	0.03	-2.09	0.71	-1.23	0.52	-21.0	0.04
Rebel	-0.71	0.52	34.23	0.94	-0.01	0.99	-0.32	0.74	-0.31	0.34	-2.13	0.21
Dynasty	13.09	0.01	-5517.07	0.02	2.53	0.28	-13.64	0.00	1.57	0.28	9.67	0.21
Nat Gov	-0.01	0.23	0.51	0.85	0.01	0.06	0.00	0.88	0.00	0.75	-0.01	0.34
Luzon 2	33.92	0.00	-6259.04	0.09	7.56	0.05	-11.76	0.10	-3.07	0.21	11.15	0.38
Luzon 3	15.65	0.00	-4088.50	0.05	2.59	0.24	-4.27	0.29	1.66	0.23	5.24	0.47
Visayas	4.79	0.46	-1217.83	0.67	2.89	0.35	-6.54	0.25	4.52	0.02	8.27	0.41
Mindanao 1	27.45	0.01	-11254.9	0.02	13.40	0.01	-22.93	0.02	5.25	0.10	33.75	0.05
Mindanao 2	7.97	0.41	-3298.74	0.44	3.13	0.49	-16.77	0.05	0.64	0.82	4.62	0.76
Intercept	44.79	0.00	17936.53	0.00	50.88	0.00	67.25	0.00	7.79	0.03	25.22	0.18
R- squared	0.794		0.660		0.746		0.762		0.522		0.511	

47 See footnote 41.
48 See footnote 42.

V. Concluding remarks

The country seems to be on track towards achieving a handful of key MDGs, that is the targets related to poverty, infant mortality, the control of major diseases and access to safe water. However targets related to universal completion of primary education, malnutrition and access to reproductive health services are unlikely to be achieved.

Notwithstanding overall national performance however, sub-national disparities exist. For instance, Mindanao provinces, particularly those in the ARMM region and other Moro-contested areas, seemed to be lagging in poverty, infant mortality and education outcomes. Small island provinces and those on the eastern seaboard, such as the Samar and Bicol provinces in Region 8 and 5, are also notably lagging in nutrition and infant mortality outcomes. On the other hand, a handful of provinces in Mindanao known as regional centers for trade and provinces on the Luzon mainland, particularly those adjacent to Metro Manila, seemed to be enjoying better outcomes.

The objective of this paper was to identify factors that could help explain such sub-national disparities. Special attention was paid to HDI-related outcomes namely poverty and per capita income, infant mortality and primary education completion rates.

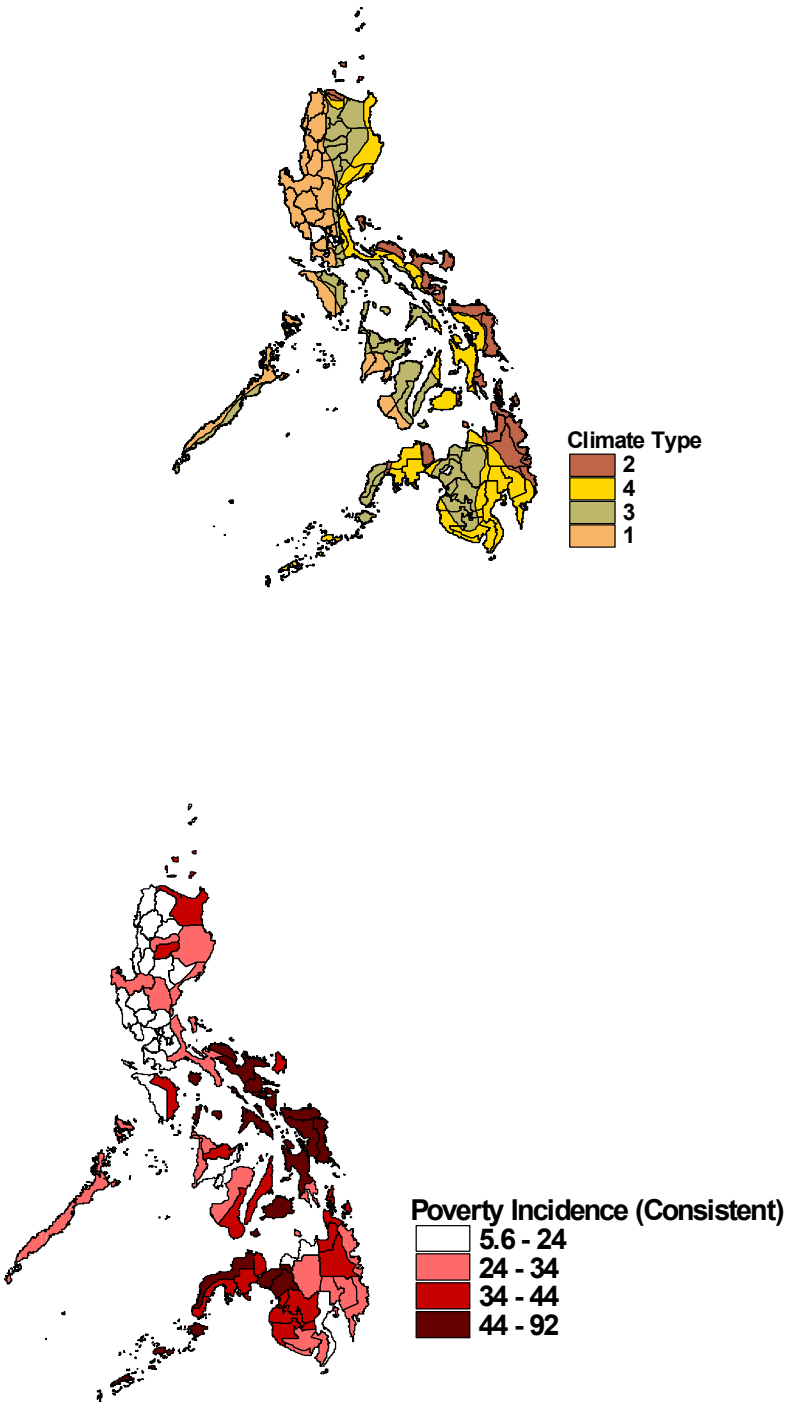
Geographical correlates, such as those related to natural geography and proximity to markets and social services, as well as socio-political factors help explain these and other less obvious patterns. Specifically,

1. **Climate type** greatly affects poverty, per capita income and infant mortality outcomes. Four climate types defined by distribution of rainfall span the country; areas subjected to heavy and persistent rainfall are disadvantaged relative to areas with distinct dry and wet seasons (**Figure 2**). While the frequency of **typhoons is not statistically significant**, this does not mean that typhoons have no bearing. Rather it indicates that overall climate conditions, of which typhoons is one factor, is the more important concern.

2. **Topography,** like climate, matters to infant mortality. This is not surprising since they both help determine the disease burden of a locality.

3. Geographical correlates relating to the proximity or access of markets are also important. **Commercial ports**, **road density, proportion of population inland, proportion of population near capital** and **population density** are statistically significant in a number of cases. A higher number of commercial ports is correlated with lower poverty incidence, higher per capita income and lower infant mortality, while greater road density is correlated with higher education completion. Greater inland populations are also correlated with lower poverty, higher per capita income and lower infant mortality, while a greater population near the capital with lower poverty and higher education completion rates.

Figure 2: Climate and Poverty Incidence



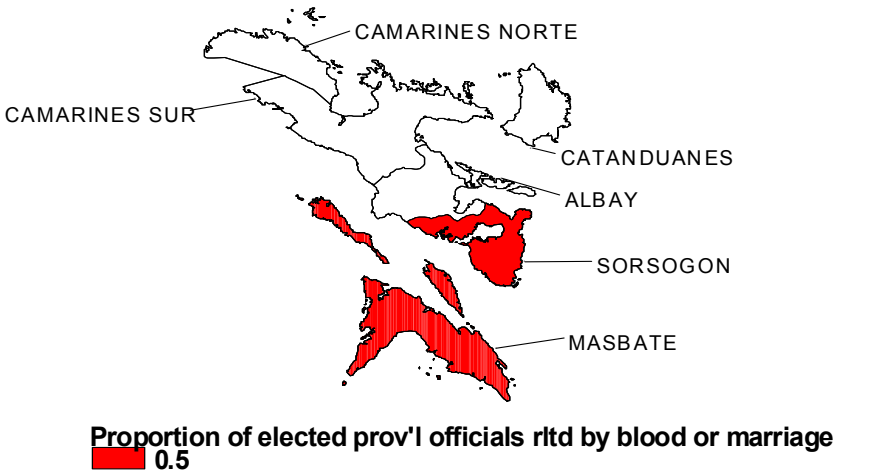
4. Beyond environmental factors, the **quality of public institutions matter**. Specifically, political collusion at the local level, represented by a **provincial political dynasty**, seems to inhibit the efficient functioning of markets and the delivery of public services. Dynasties are correlated with higher poverty, lower per capita income and lower primary education completion rates.

   It is difficult to isolate examples of provinces with high poverty attributed solely to dynasties. However Region 5, Bicol, provides a rough illustration (**Figure 3**). While all six Bicol provinces have similar climate (types 2-4) and typhoon (frequent) patterns, the poverty incidence in two provinces which feature dynasties, i.e. Masbate at 73% and Sorsogon at 53%, is notably lower than that of the other four, i.e. which ranges from 43%-49%. (In fact, Masbate's dynasties can be argued to be more entrenched and enduring, further explaining the 20-percentage point gap between it and Sorsogon.) Other variables don't seem to fully explain this.

5. Areas that have been subject to social and armed conflict are also lagging **(Figure 4).** Specifically, provinces in the south that have been involved (and are still) in the **Moro secessionist's armed struggle** are behind on all counts. Likewise for provinces with the highest concentration of IP population, i.e. those comprising the special **Cordillera Administrative Region.** The Moro and IP conflicts are, at their root, about political, economic and cultural self-determination. Interestingly, a history of communist insurgency in the 1980s has no significant bearing on sub-national outcomes today.

6. Finally, dummy variables capture underlying locational variations not explained by the preceding factors. The whole of **Mindanao** (and not just Moro-contested areas) is lagging in education (also Figure 4). The **island provinces of Luzon**, including Bicol, are not far behind Muslim Mindanao and the Cordillera provinces in high poverty and low per capita incomes. And the **Visayas** has notably higher numbers of underweight children. (Figure 5)

Figure 3: Dynasties and Poverty Incidence in Bicol (Region 5)



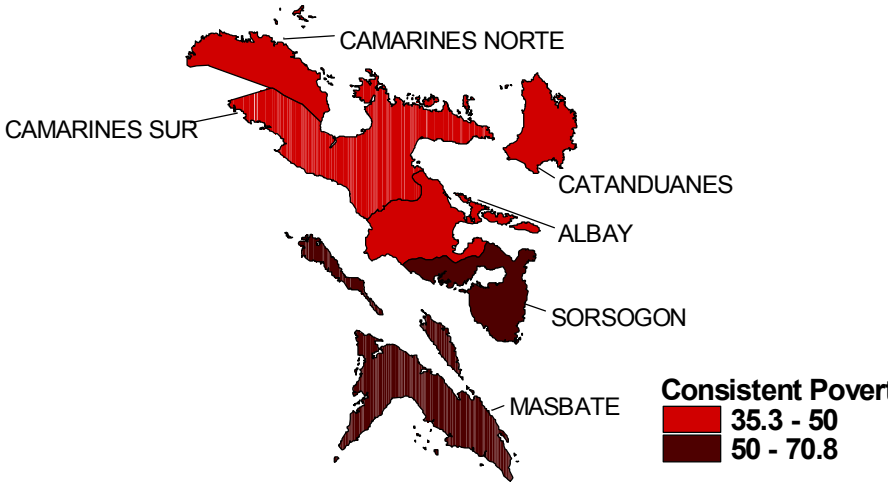


Figure 4: Infant Mortality, Primary School Completion in IP/Moro and other Mindanao

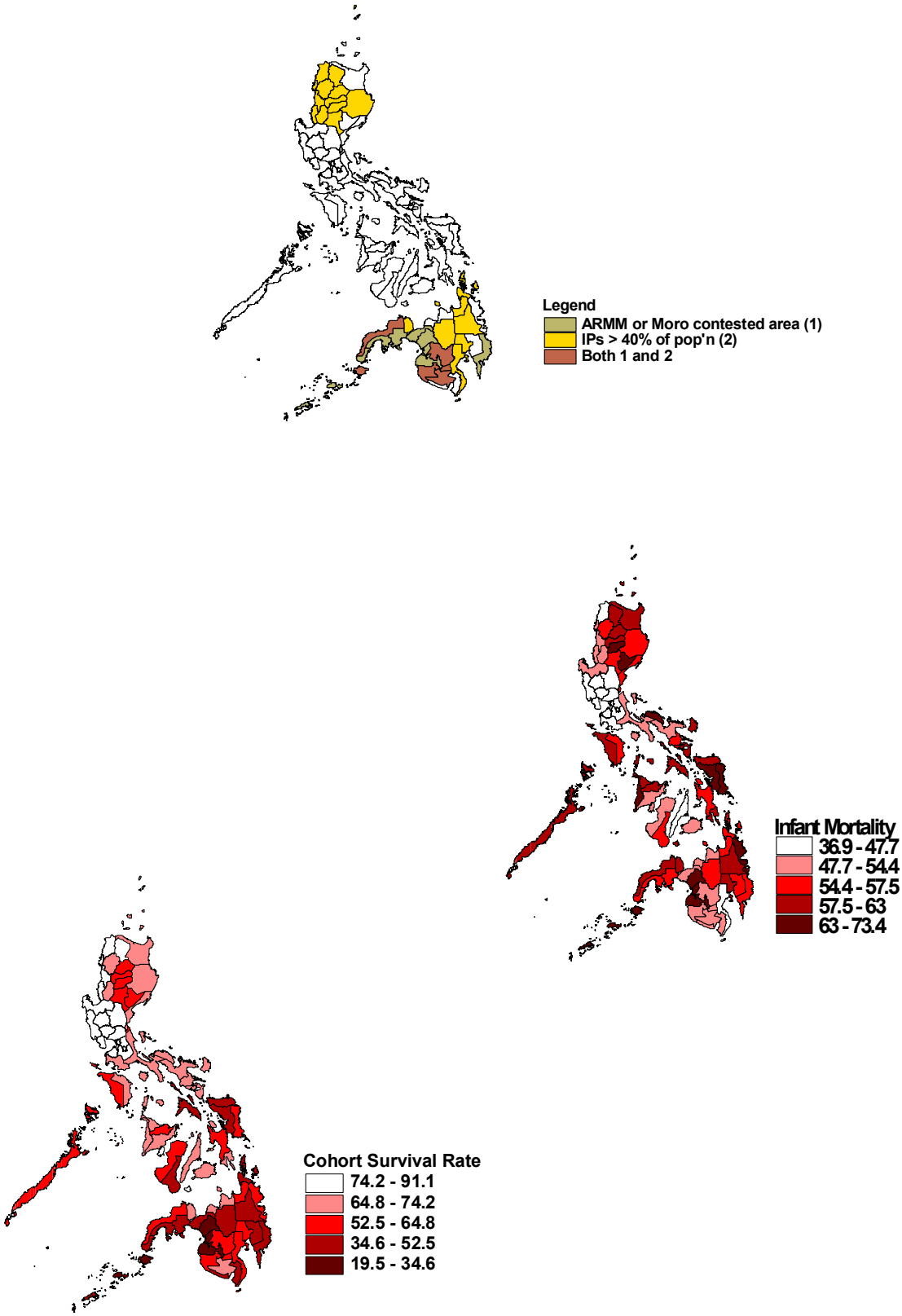
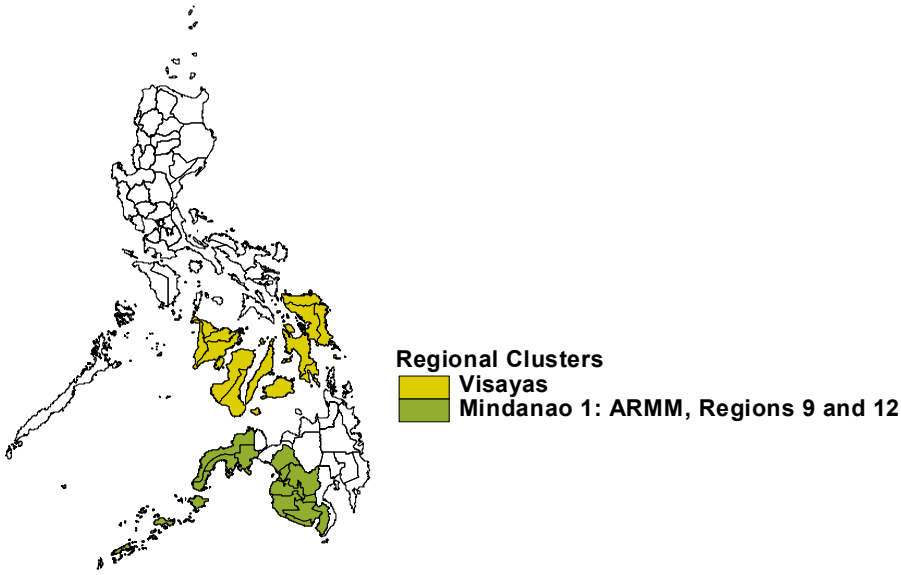
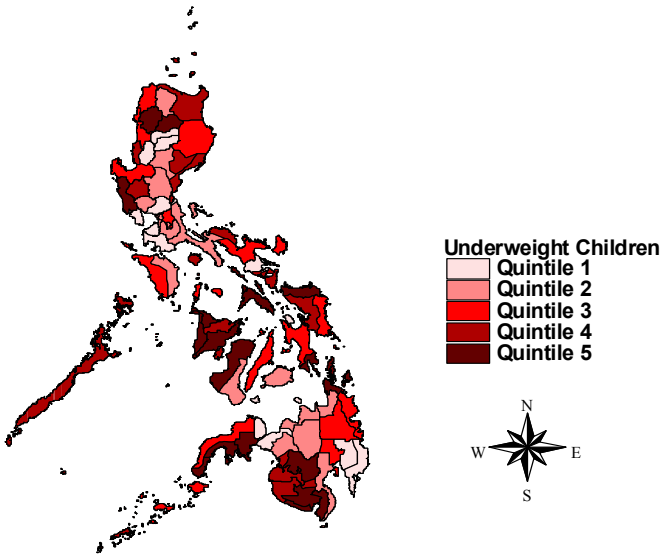


Figure 5: Underweight Children in Visayas and Mindanao 1





A few implications immediately come to mind:

First, that climate matters seems terribly obvious. Unfortunately, it is not apparent how sub-national nuances in climate and weather conditions actually influence the design of public infrastructure and/or agricultural interventions, including the allocation of funds. For instance, funds for the construction of school-buildings (one classroom) are controlled by the central government and allocations are based on a standard design, e.g. about P305, 000 per classroom, or US$ 6000. However, for an island province that experiences climate type 2 (no dry season and very heavy rainfall from November-January) and very frequent typhoons, this package will not suffice; in fact different roofing materials, walling/window designs to mitigate corrosion (and lessen maintenance costs in the longer run) and higher hauling and transport costs will require 60% to 110% more funds per classroom. [49] Other centrally controlled budget allocations – for instance for agricultural modernization, which is divided equally among congressional districts – will likely have the same shortcomings.

The results on climate also highlight the importance of R&D and extension services (e.g. how R&D results are disseminated to farmers, and how farmers are able to feedback). It is not clear how far technological interventions from the Department of Agriculture are (or can be) adapted to local climate and geographical peculiarities or how these figure into policy and planning exercises at the national level. [50] Balisacan and Pernia (2002) who earlier found 'typhoons' to have a statistically significant and negative effect on the poor - notwithstanding the positive effect of agrarian reform, irrigation and macroeconomic policy variables - were silent on policy implications.

Geographical nuances should also factor into international comparisons. Both the Philippines and Thailand are considered tropical for instance, but sub-national climate variations differ.

Other areas to explore are implications for physical or spatial planning and countryside development policy. For instance, public investments and investment incentives are driven by the objective to disperse industries equitably to the countryside, and are intended, among others, to reverse rapid rural-urban migration patterns. The efficacy of such policies should be reviewed in view of, say, the possible inherent locational advantages of certain areas. This does not mean to imply a simple *geographical determinism* per se however. Commercial ports and roads, especially in tandem with human capital investments, have a positive effect on outcomes and are possible policy handles. Likewise irrigation inputs and agrarian reform (Balisacan and Pernia, 2002).

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[49] Cost estimates from the office of Florencio Abad, Representative, Batanes province.

[50] Based on our brief encounters with the government agencies concerned, it would seem that incremental budget increases to better maintain land and soil data as well as to speed up research on the impact of climactic conditions on productivity and epidemiology would be in order.

Clearly the marginalization of provinces comprising Muslim Mindanao and the Cordilleras is an urgent matter – and one which has no easy answer. Whether the "autonomy" provided by the 1987 Constitution will reverse these disturbing trends may not be known immediately. In the meantime, however attention should be paid to encouraging innovative approaches and monitoring the efficacy of the special governance structures now in place for these regions.

Finally, the results on political dynasties invite further study. While they are a start, the complex patrimonial and inter-generational nature of Philippine politics merits a more detailed typology of political dynasties so that their influence on national and local human development outcomes can be better understood.

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