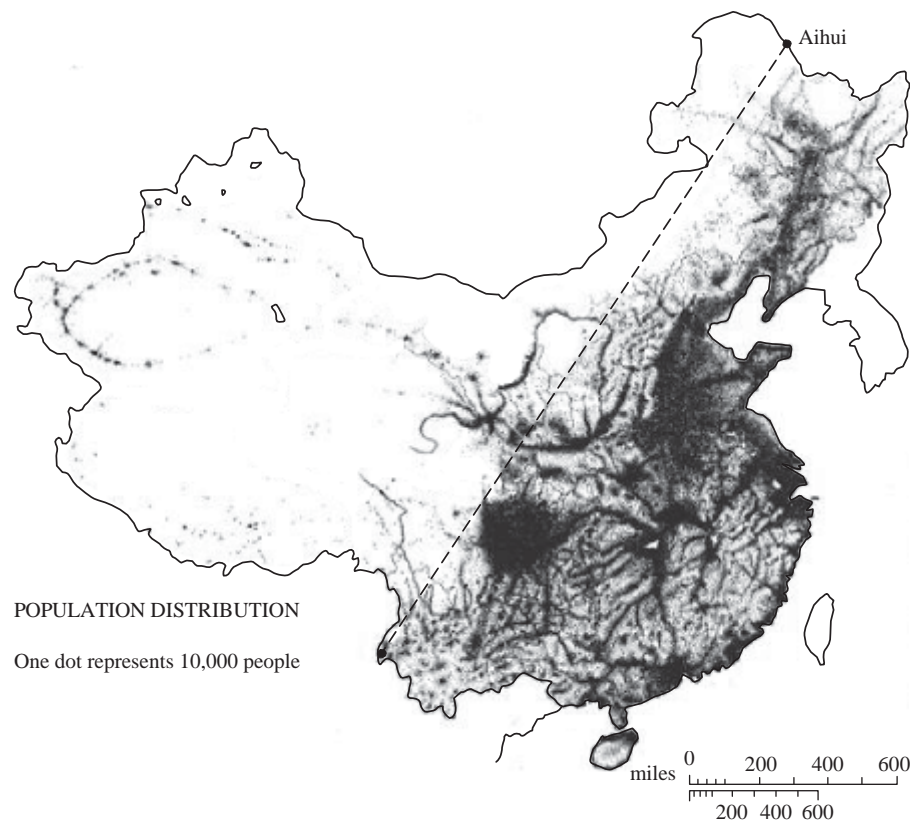


1: The Geographical Setting

China is the most populous nation, and it is also one of the largest countries, with the third biggest landmass, after Russia and Canada. Its land area is 2% greater than that of the United States, which it resembles geographically. The two countries cover similar latitudes and a similar range of climatic conditions, which leads to numerous parallels between regions in the eastern half of both countries. The climate of Guangzhou is like that of Miami, and the climate of the northeast (Manchuria) is similar to that of Minnesota. The biggest difference between China and the United States is that China is far more rugged, and more of the land is inhospitable. Most of China consists of hills, mountains, and high plateaus, broken by river valleys and a few plains and basins. In the West, China borders on the vast deserts of inner Asia. Mount Everest, the highest mountain in the world, is on the China-Nepal border, while the Turfan depression in Xinjiang, 155 meters below sea level, is the third lowest place on earth. Only 25% of China is less than 500 meters (1,640 feet) above sea level, compared to 60% of North America and 80% of Europe. Although China historically was a nation of farmers, only a small proportion of the land is arable. The largest plains in China cover only a fraction of the area of the vast central plain of the American Midwest. China is big, rugged and diverse.

China has only a single seacoast. Moreover, China's eastern seaboard is not particularly accessible. Most of the southern part of the coast is rugged and hilly, so that the occasional good harbors tend to be cut off from the inland regions. In the north, especially between the Yangtze and the Shandong Peninsula, the coast is low and swampy with few good harbors. Reflecting these geographic conditions, China's traditional economy was inwardly oriented. There were outward-oriented, seafaring subcultures, but these tended to be fenced off in the southeast coast, which was economically peripheral. China thus contrasts sharply with northern Europe and with Japan, Taiwan, and Korea, with their strong seagoing and commercial traditions. The lack of a coastal orientation contributed to China's late start in economic modernization. Indeed, China's links to the modern world economy really began to multiply only when foreign-dominated Treaty Ports were forcibly implanted into China's key economic regions after 1842. Today, after more than thirty years of open development strategy and investment in industry and transport, the coasts have surged ahead and have been firmly linked to the ocean transport web and the

global economy. However, the vast interior continues to place huge demands on China's economic capacity, demands that will have lasting ramifications for future development.



1.1 Landforms

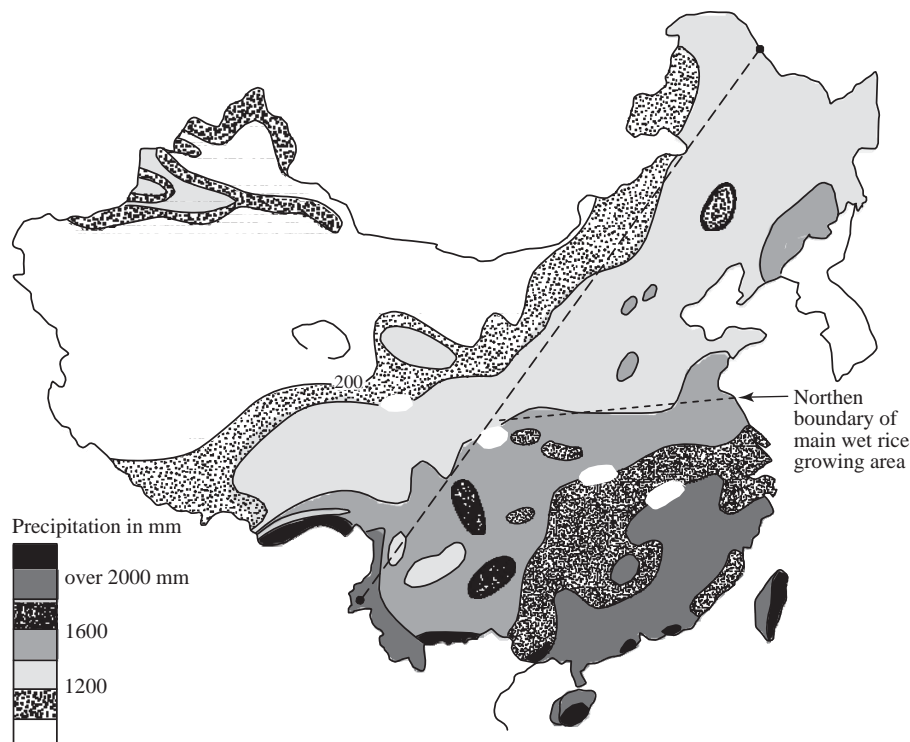
The entire Chinese landmass tilts from West to East. The Himalayas are a young mountain range, still rising by several feet per century because of the collision of the Indian subcontinent with the Asian land-mass. This mountain-building process caused devastating earthquakes in Sichuan (2008) and Nepal (2015); more generally, it shapes the whole topography of China. Mountain ranges are high and rugged in the west and taper off to low hills in the east, so the land of China forms three great “steps” in elevation. The top step is made up of the frigid Tibetan Plateau, which *averages* more than 4,000 meters (over 13,000 feet) above sea level and contains the world's highest mountains. The second step consists of a series of plateaus and basins with an elevation of between 1000 and 2000 meters (between 3 and 7 thousand feet). These include the basins in arid Northwestern China (such as the Tarim and Junggar Basins), the Inner Mongolian plateau and Loess plateau in northern China, and the Yunnan-Guizhou Plateau in south-western China. The third step consists of the plains and low hills of eastern China,

where the elevation is generally below 500 meters. Even in the east, ranges of relatively low mountains create barriers to north-south transport and separate different climate and vegetation areas.

The three most important rivers in China, the Yangtze (Changjiang), Yellow (Huang) and Pearl (Zhujiang) Rivers, all flow from West to East in accord with the basic topography. Even the great rivers of South and South-east Asia, including the Mekong and Ganges originate within China on the Tibetan highland, and initially flow East before turning south and cutting through mountain ranges on the way to the southern seas (See Figure 20.2). The western half of China is high and arid and the population is sparse. A line drawn from the town of Aihui in the northeast province of Heilongjiang, to Tengchong in the southwest province of Yunnan (the Aihui-Tengchong line: see Figure 1-1) divides the area of China in half. But only 6% of the population lives in the dry, mountainous west: 94% of the population lives in the eastern half of the country. The area west-northwest of the Aihui-Tengchong line has a population density of only 15 people per square kilometer, about the same as Utah or Argentina. Within this vast area, the Tibetan plateau contains a quarter of the land area of China, but less than 1% of the population. The Northwest region supports about 4.5% of the population, mostly in a few basins and scattered oases. Shortage of available water sharply limits the population potential of the western regions. East-southeast of the Aihui-Tengchong line, the country is lower in elevation and has ample water. This half is considered "monsoon China," for the seasonal summer rains that bring abundant water in most years. The population density in this Eastern half of China is about 270 people per square kilometer, less than India (368) or Japan (337), but higher than the UK (255), or the US states that are part of the Northeast crescent from Boston to DC (186).

Table 1-1: Land and Population, 2012					
	Land Area	Arable Land	Arable Land	Population	Arable Per Capita
	(Million Hectares)	(Million Hectares)	(Percent)	(Million)	(hectares)
China	939	106	11.3%	1,351	0.08
India	297	156	52.5%	1,237	0.13
United States	915	156	17.0%	314	0.50
Russia	1,638	120	7.3%	143	0.83
Indonesia	181	24	13.0%	247	0.10
Source: World Bank, World Development Indicators, at http://devdata.worldbank.org/dataonline					
Arable Land computed from WDI Arable Land Percent * Total Land					
A hectare is a square 100 meters on each side, equal to about 2.5 acres.					

China's hilly and complex terrain means that relatively little of the land is suitable for cultivation. The good agricultural land lies in the fertile plains and valleys of the major river systems, separated from one another by hills and mountains. Less than 12 percent of China is arable (Table 1-1), and there is very little land potentially suited for cultivation not already exploited. Because of its rugged topography, China has less arable land per capita than India, even though India is much more densely populated overall. The United States, with one-fourth China's population, has more arable land than China, and much more marginal land that would be brought into cultivation if it were profitable to do so. Per capita arable land in China is only .08 hectare, or one fifth of an acre. This is the average size of a new suburban home lot in the United States. Over the centuries, China has adapted to arable land scarcity by developing labor-intensive agricultural techniques that enable it to wrest more total food grain from the soil than any other country.



1.2. Climate and Water

The climate of China is dominated by the southeast monsoon, which sets the distinctive pattern of wet summers and dry winters. In winter, there is little rain or snow anywhere in China.

A high pressure zone is established over central Asia, creating a steady flow of cold, dry air over all of eastern China. But in the summer, heating of the entire Asian land-mass creates a low pressure area over central Asia which draws the tropical maritime air, saturated with moisture, into southeastern China. As this air encounters mountain ridges and cooler air masses, rains fall abundantly on southern China. As a result, the coast stays relatively cool while the inland basins become very hot, particularly in the “four furnaces” of central China (Chongqing, Wuhan, Changsha and Nanjing) and in the western deserts.

As the summer monsoon moves northwest, it loses strength and delivers less rain (Figure 1-2). Overall the north is dry while the south is lush and drained by numerous waterways. The difference is reflected in an ancient saying about traditional means of transport: “South, boat; North, horse.” There is evidence that this long-standing geographic difference is now increasing due to the impact of global climate change (Climate Change Report 2011). Usually, the monsoons push over the belt of mountains between the Yangtze and Yellow River basins, providing moderate summer rains in northern China. In bad years, however, the monsoons are too weak to cross over to the Yellow River valley and become stuck over the central mountain belt. In those years, north China is struck by drought, while the rains hover over southern China, flooding the countryside. This central mountain range, then, creates another fundamental dividing line between south China, with abundant water, and north China, which is chronically short of water.

In fact, China is an arid country overall. In the Northwest, the margin of human habitation is defined by a continual tug of war with the desert, which threatens to advance, rolling over farmlands. The Aihui-Tengchong marks this frontier between adequate and insufficient water. The precipitation gradient shapes the different character of China’s three great West-to-East river systems. In the north, the Yellow River flows almost entirely through arid and semi-arid country. The large population of northern China creates enormous demands on Yellow River water. One of the great rivers of the world, 4,800 kilometers long, but of only moderate total volume, the Yellow River literally runs dry in many years, as withdrawals take *all* the available water. A record was reached in 1997, when there was no water in the downstream stretches of the Yellow River for 226 days (Liu 1998: 899). Furthermore, the Yellow River carries a heavy load of dissolved mud and sand, 1.6 billion tons every year, one-fourth of which

is deposited on the riverbed. This raises the river bed about 10 cm. each year, so that today the river--held between a line of dikes on either side--flows along an elevated path, always threatening to flood the surrounding, lower countryside when water does come. By contrast, in lush southern China, the Yangtze is only a little bit longer than the Yellow River, but carries twenty times as much water. The Yangtze flows abundantly year round, and carries only one-third as much total sediment as the Yellow River. Even the Pearl River system carries six times as much water as the Yellow River. The distribution of water resources has led the Chinese government to create a massive South-to-North water transfer system of aqueducts and canals (Chapter 21). All the rivers rise and fall in rhythm with the monsoon. Reaching their lowest point around February, the rivers rise steadily until August or September, at which point they flow mightily, barely held within their dikes and covering vast floodplains.

1.3. Provinces and Regions

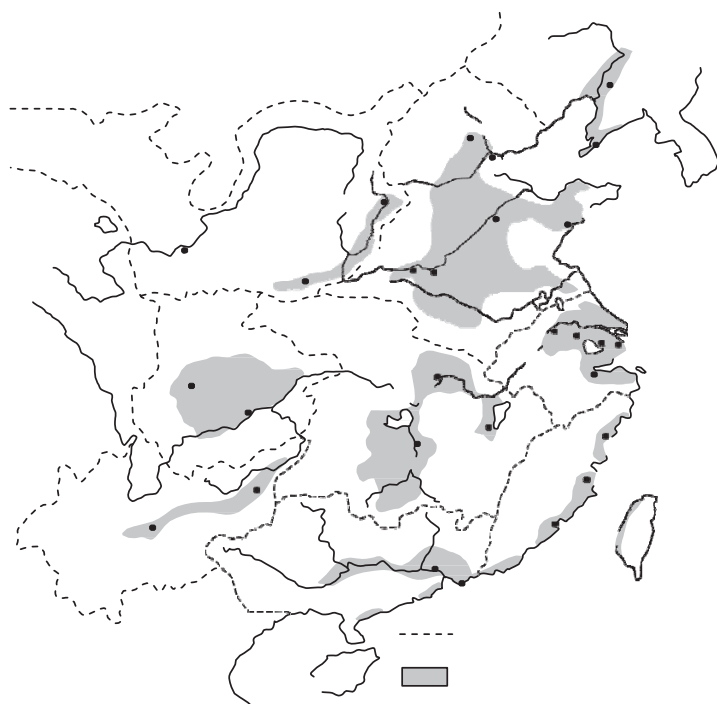


The most familiar way to divide China's vast space is into provinces. China currently has 31 diverse province-level administrative units, each of which is as big as a European country. The smallest population is Tibet, with 3 million in 2012. China maintains an official distinction

between provinces (22), municipalities under national supervision (4), and autonomous regions of ethnic minorities (5). These all have province-level “rank” in the national administrative system, and we will use the term “province” to refer to all of them. Some provinces have identities that trace back more than two millennia; two of them, however, are recent creations: Hainan Island was carved out of Guangdong province in 1988; and Chongqing Municipality was separated from Sichuan Province in 1997. In addition, there are now two Special Autonomous Regions (SARs) of China, Hong Kong (since 1997) and Macau (since 1999). These are never treated as provinces. Figure 1-3 shows the provinces and islands of China.

Provinces are not always the most natural way to divide up China’s economic space. Another approach, following anthropologist William Skinner, is to divide Chinese territory into “macroregions” defined by the rugged topography. Each macroregion spreads over more than one province, and consists of a densely-settled core area and a less densely settled and often hilly periphery. Although it is possible to divide all of China into macroregions, not all macroregions are equal: we will look at several of the most important (See Figure 1.4). The most important macroregion is North China, which can be thought of as the most central region of the Chinese economy. The North China plain is by far the largest flat land area in China, and it contains a little over one quarter of China’s total farm land. Sheer size gives North China a predominant position among China’s regions, but it is rather average in terms of development levels overall, with 22% of China’s population producing 23.5% of GDP in 2013. Thus, within the region, the highly developed Beijing-Tianjin metropolitan area is counter-balanced by the vast rural areas. Beijing, with 13 million people in 2012, serves both as the national capital and as the main urban center of the North China Plain. Shandong and Henan provinces, each with a population approaching 100 million, are the two largest agricultural producers in China. Farming villages spread densely over the entire plain, but many agricultural areas either depend on unreliable seasonal rains or pump underground water from rapidly receding aquifers.

The most developed part of China is the Lower Yangtze macroregion. At the center of the region is the metropolis of Shanghai, economically the most important city in China. With 12% of China’s population, the three core Lower Yangtze provinces of Shanghai, Jiangsu and



Zhejiang produce 23% of China's industrial output and 19% of GDP in 2013. Incomes are higher and urbanization rates significantly greater than in any other area of China. Indeed, in recent years industrial production has spread so rapidly into the countryside that many areas classified as rural are more realistically thought of as urbanized countryside. For centuries, this was the richest part of China, and during the last decade its growth has been well above the national average, so the Lower Yangtze is regaining its predominant role in the Chinese economy. The Yangtze River Delta, covering 50,000 square kilometers, is one of the great river deltas of the world. Wet rice cultivation is dominant, and typically two or more crops are harvested per year. The country is lush and green, with water everywhere. The intensely cultivated countryside, comprising 7% of China's arable land, produces 9% of crop output. Shanghai is China's largest city, but the entire region is densely urbanized. Several important medium-sized cities serve the delta, ranging from Ningbo and Hangzhou in the south, to Suzhou and Wuxi, and Nanjing in the west. The Lower Yangtze is also a foreign trade powerhouse, with 2012 exports equal to 40% of GDP, nearly twice the national average.

Adjacent to the North China Plain, and tied to it by numerous economic links, is the region of the Northeast, or Manchuria. The Northeast is a region of abundant natural resources: 8% of China's population lives here (2013) cultivating twice as much arable land per capita as the Chinese average. At the beginning of the twentieth century, Chinese settlers braved harsh winters to reclaim farmland from the northern forests of this region. The relative abundance of land has encouraged relatively high levels of agricultural mechanization and made the region an exporter of food grains and soybeans to the rest of China. Rich reserves of iron ore, coal, and petroleum once made the Northeast the center of China's heavy industry. Shenyang, the traditional industrial center, is surrounded by a ring of eight medium-sized industrial cities, including Anshan, site of China's oldest steel mill. But over the past two decades, the Northeast has struggled: the number of factory jobs in state-run industry has shrunk; the region has lost the important role it played in the national planned economy; and growth has lagged. From being a richer part of China, the Northeast has become average, producing 8% of GDP in 2013.

The economies of the North, Northeast, and Lower Yangtze macroregions have had very different trajectories in recent years. Historically, the link between the North China Plain and the Lower Yangtze made China into a single economic entity: the Grand Canal was built to ship the food grain surpluses of the lower Yangtze to the national capital region in the northern plain. Today, the Beijing–Shanghai link still defines the central axis of the economy. For a period in the mid-twentieth century, the mineral and land resources of the Northeast, along with the creation of its heavy industrial base, led it to be highly integrated into socialist, industrializing China. The North and Northeast are highly integrated into the rest of the national economy (but less than average with the global economy). This complex of macroregions has strengthened its ties to areas to the west (especially the coal mines in Shanxi and Inner Mongolia), extending its reach beyond the traditional North China Plain. The crescent from Shanghai up through Beijing to the Northeast defines the core of the Chinese economy. It connects to the global economy at the Lower Yangtze region.

The remaining Chinese macroregions are much less tightly integrated into a single national economic system. The provinces in the middle reach of the Yangtze—Hubei, Hunan, and Jiangxi—entered the reform era at Chinese average levels of development but have lagged behind the rapidly growing coastal regions. These provinces hold 13% of China's population but

produced only 10% of 2013 GDP. The land is well irrigated and intensely cultivated, but in contrast to the diversified agricultural economy of the Lower Yangtze, the Middle Yangtze primarily produces grain. This grain monoculture enables the region to export significant surpluses of grain to other regions of China. The major urban center is Wuhan, which has trade and industrial roles that extend beyond the region.

Following the Yangtze further upstream, one arrives at the huge Sichuan basin: Fertile, densely populated, and entirely surrounded by high mountains, there is no similar geographical feature anywhere else in the world. Although it is the core of the Upper Yangtze macroregion, the Sichuan basin is now divided into two provinces, Chongqing municipality and Sichuan Province, which together have a 2013 population of 118 million. There is no natural route into or out of the Sichuan basin, and even the Yangtze River, as it flows out of Sichuan, cuts its way through a spectacular series of gorges, capped by the huge Three Gorges Dam. Chongqing and Chengdu divide between them the functions of urban centers for the Upper Yangtze macroregion. In this region, out-migration has exceeded natural population growth since the turn of the century, and the population has declined by about 6% from its peak (to 111 million in 2013). Near the Sichuan basin, and linked to it by extensive economic and transport ties, is the Yunnan-Guizhou plateau, labeled the “Southwest China” macroregion in Figure 1.4. While geographic conditions are quite different there from the Sichuan basin, the Chinese government usually includes Yunnan and Guizhou with Sichuan and Chongqing to form a greater Southwest China region. All four provinces are densely populated, have a common low income, and face serious development challenges. Here 14% of China’s population (in 2013) produces 9% of GDP.

In the northwest and Far West of China, the macroregion concept is less applicable. Population is concentrated in a few fertile river valleys—the Wei River in Shaanxi around Xi’an, and the Fen Valley in Shanxi around Taiyuan—and to the west, people live primarily in oases or a few fertile valleys in the northwest. Outside the valleys and oases, the land is arid and of poor quality, mainly used by nomadic herdspeople. As one ascends to the high plateau of Tibet and Qinghai, one finds vast stretches of virtually uninhabited land.

Figure 1.4 shows two macroregions along the southeast coast. Both these macroregions have long been oriented outwards toward ocean-borne trade, while most of China has been oriented inward. John King Fairbank suggested that “maritime China” was a distinct region and

sub-culture within Chinese civilization. Maritime China is the homeland of most of the Overseas Chinese who left China before 1949. It is cut off from much of the rest of China by the mountain chains that define a narrow coastal strip. There is little hinterland, and communication was traditionally up and down the coast by boat. The one large core area along the coast is the fertile Pearl River Delta, the heart of Guangdong Province. The Delta has long supported an extremely rich diversified agriculture and a correspondingly dense population. In recent years the rapid growth of an externally oriented economy in south-east China has transformed this region. Guangdong province, in particular, has been transformed into a dense and productive, highly urbanized export-oriented economy. Exports were 65% of GDP in 2012, by far the highest in China. Moreover, export-driven economic growth drew migrants from interior China to Guangdong, giving it a 2012 population of 106 million, the largest population and biggest GDP of any single province in China. At the same time, the four mainland provinces that are part of the Southeast Coast and Far South macroregions contain many poorer peripheral and hilly areas, so taken altogether they are not richer than the rest of China: in 2013, 15% of China's population produced 16% of national GDP in these provinces.

Over the past 25 years, the different segments of maritime China have grown together, increasingly constituting a single economic powerhouse. Investment from Hong Kong and Taiwan has built factories and new trading relationships. Of course, Taiwan and Hong Kong were traditionally parts of maritime China, but their close cultural, economic, and geographic ties with the other regions of maritime China were temporarily broken under Maoist China after 1949. As a result, those parts of Maritime China within the PRC's boundaries were surprisingly poor and backward at the end of the 1970s, and one of the first priorities of reformers after 1978 was to reestablish traditional economic links among parts of Maritime China. The early phases of China's economic opening after 1978 are largely the steps in the reconstitution of these traditional links. Four special economic zones (SEZs) were set up in 1979–1980 to attract investors to China. Each SEZ targeted a particular group of “maritime Chinese” as a source of investment and trade ties. The largest SEZ, Shenzhen, was set up adjacent to Hong Kong to attract spillover investment from what was then still a British colony. The Zhuhai SEZ was set up across the Pearl River to play the same role with respect to the Portuguese colony of Macau. Up the coast, the Xiamen SEZ was targeted on the south Fujian (Minnan) people who live on both sides of the Taiwan straits. (Most people in Taiwan speak the same variety of Minnan that

is spoken around Xiamen, from where their ancestors migrated after the 1600s.) Traders from maritime China had also taken up residence in Southeast Asia over the centuries, and the SEZs were designed to appeal to their businesses as well. The fourth SEZ, Shantou, was established at the Chaozhou (Teochiu) ethnic homeland to attract investment from this group, which is especially important economically in Southeast Asia. The reconstitution of traditional links among the different parts of maritime China was an enormous success. As China opened up, investment from Hong Kong, Taiwan and ethnic Chinese businesses in Southeast Asia increased dramatically, and trade links expanded rapidly to incorporate the China mainland. Today, the core urban functions of the macroregions of maritime China are divided among Hong Kong, Guangzhou, Shenzhen and Taipei, which organize and manage a single export powerhouse. Taiwan and the Pearl River delta today serve as the dual cores of Maritime China, and businesses there manage cross-border networks that increasingly reach into the Lower Yangtze macroregion as well.

1.4 Natural Resources

Overall, China is a land-scarce and labor-abundant economy. With 20% of the world's population, China occupies 7% of the world's land area. China's share of world mineral wealth is roughly proportional to its share of land area, such that mineral reserves per capita are typically half or less of world averages. Even reserves of coal, which China mines and burns in abundance, amount to only 11% of total verified world reserves. China, tied with Canada, was the fourth largest extractor of petroleum in 2014, but proven reserves of petroleum and natural gas amount to only 1.1% and 1.8% of the respective world totals. China may be able to develop its abundant shale gas deposits, but it is not yet clear whether complex geological structures can be economically exploited. On the positive side, there are rich deposits of nonferrous minerals such as tin and copper, and especially tungsten and rare earth.

The distribution of mineral and energy resources in China is extremely uneven. Fossil fuels are predominantly in the north, which has 90% of the oil and 80% of the coal reserves. Hydroelectric potential is substantial, where there is water (the south) and relief (the west): 68% of the hydropower potential is in the Southwest macroregion. The rapidly growing southern coastal regions have virtually no energy resources. Geographic constraints, therefore, dictate that China must develop in a labor-intensive and, ultimately, knowledge-intensive path. Moreover,

unforgiving environmental constraints will make economic trade-offs more difficult and complex for the foreseeable future.

1.5 The Built Landscape

Geography provides a baseline, describing the spatial conditions and resources that give form to economic activity and structure what is possible. However, geographic conditions are not fixed and immutable: human activity is constantly reshaping what is geographically possible or meaningful. Even in pre-modern China, a significant part of the geography was “man-made.” The rich landscape of the Lower Yangtze is the product of many years spent draining swampland and fertilizing new fields, as the striking terraced hills and irrigation networks of upland southern China are the outcome of centuries of hard work. A modern economy has a much larger capacity to reshape landscapes and modern economic growth constantly creates new patterns of habitation and transportation. This is particularly true in China given the extraordinarily large investments that have accompanied rapid economic growth (See Chapter 6), which has accelerated the pace at which landscapes are being reconstructed. The rapid build-out of modern infrastructure in China is changing the meaning of space and the impact of geographic conditions in China. China is becoming much “smaller,” more accessible: Areas that were remote twenty years ago are now accessible to tourists, merchants, and government functionaries, and local people there find it much easier to get out, to migrate or to travel for business or experience.

During the first thirty years of reform and opening, this massive infrastructure effort was directed particularly towards re-establishing links with ocean-borne trade networks. Today, China has six of the world’s ten busiest ports—with Shanghai the largest in terms both of tonnage and number of containers shipped—and China ranks highly (28th out of 180 countries) on the World Bank’s 2014 assessment of trade-related logistics capability, placing it securely among the most advanced countries. As a result, China is now more fully connected to the world than any other country. The 2015 “Liner Shipping Connectivity Index,” calculated on the basis of shipping lines, capacities and volumes by the UN, assigns China the highest value of 167, compared to next-best Singapore at 117 (the US, UK, Germany and the Netherlands are all in the 95-98 range). The re-integration of “maritime China” and the success of China’s export drive would have been impossible without this massive investment effort.

Since 2000, the focus has shifted to the domestic land transport infrastructure. China has already built out a national expressway network: from a few modest regional expressways in the early 1990s, China's network by the end of 2014 had grown to be the world's largest, 112,000 kilometers, compared to 76,000 kilometers in the U.S. Since 2004, China has added 7,760 kilometers of expressway every year. Interregional car travel is now feasible, while traffic fatalities have dropped in half, notwithstanding the explosion in private vehicles. A new wave of transformation is occurring with high-speed rail, with a nation-wide grid of four north-south and four east-west mainlines planned for 2020. About a third of this was in operation by 2013, shrinking the time required to get from Beijing to Shanghai, for example, to under 6 hours. Like the rest of the world, China is getting wired: 1.29 billion cell phones (more than one for every adult), and 400 million broadband internet connections were in use at the end of 2014. It is clear is that these changes in infrastructure will have significant ramifications for nearly every aspect of economic growth. (Possible Figure 1.5 Transport Grid).

Moreover, the impact of these dramatic changes in communication and mobility are still just beginning to be felt. It is true that in some cases, infrastructure investments may have been over-hasty and poorly planned, leading to low utilization and poor efficiency: logistics within China are still relatively expensive. However, thus far, the economy has steadily grown into the infrastructure created. As long as congestion problems can be overcome, the declining cost of land transport will change urbanization patterns, create new links among old macroregions, and facilitate the redistribution of economic activity across the expanse of China.

1.6. Changing Regional Dynamics

For almost thirty years after the beginning of China's market transition, economic growth was more rapid in the coastal provinces than in inland provinces. At first, this reflected catch-up growth on the part of the coastal regions: development strategy under the planned economy had neglected the coastal provinces, which entered the reform era significantly under-performing their obvious potential. However, the economic transformation went far beyond this. The Chinese government extended preferential policies to coastal regions and poured resources into the infrastructure necessary to link "maritime China" up with world markets. Moreover, as restrictions on population movement were gradually relaxed, a steady and growing stream of migrants came to the coastal provinces. The result was that China's economy tilted to the east

coast. The nine coastal provinces that participated fully in the explosive development of China's external economy—Beijing and Tianjin down through Guangdong—produced 43% of China's GDP in 1978, and had increased their share to 55% by 2006. By that time, all the highest per capita GDP provinces were on the coast, and the coast-inland gap had become one of the most widely remarked features of the Chinese economy.

A few years into the twenty-first century, the tilt toward the coastal regions stopped and gradually went into reverse. Growth in the coastal provinces slowed, and by 2014, share of national GDP accounted for by the nine core coastal provinces had declined from its 2006 peak of 55% to 50.6%. There are many reasons for this fundamental turning point in China's regional development, but most important is the change in relative costs caused by growth and development. Changing labor markets led to rapidly increasing wages (Chapter 8), and world and domestic prices of energy and raw materials spiked. The value of land soared while congestion and pollution costs increased. These changes in relative scarcities were quickly reflected in the costs faced by businesses selling into highly competitive markets, and two market shifts followed. First, the overall competitiveness of China's existing exports eroded. It is not coincidental that 2006, the year coastal GDP peaked as a share of national GDP, was also the year in which China's exports reached their peak value as a share of GDP. Subsequently, exports continued to grow in absolute terms, but less rapidly than overall GDP, so exports as a share of GDP declined (Chapter 16). Second, businesses began to move production inland in search of cheaper land and lower wages. Even some businesses that produced entirely for export (such as the huge electronics assembler Foxconn) set up inland factories to benefit from lower costs.

This shift, driven primarily by market forces, was also strongly encouraged by Chinese government policy. In 1999, the Chinese government officially launched a Western Development Program to give preference to western and inland provinces in investment projects and other economic development policies. The massive infrastructure build-out described in the previous section was part of this policy shift. Moreover, the government crafted many policies to redistribute investment and fiscal resources away from the coast and toward inland provinces (Chapter 18). In addition, the government influenced the distribution of activity in more subtle ways. For example, it is much easier to convert agricultural land to industrial uses around inland

cities than around coastal cities, because the central government assigns strict land conversion quotas in coastal areas. Pollution standards are relatively lax inland, while the increasingly middle class residents of coastal cities have begun to demand a healthier environment. While production has begun to shift inland, households have continued to move toward the coast. So far, migration to coastal regions has continued, with the nine core coastal provinces increasing their share of national population from 33.4% in 1978, to 36% in 2006, and further to 37.5% in 2013. The coastal cities still boast higher wages and more amenities than most inland areas.

Beyond the broad generalizations about coast and inland, a more complex picture quickly emerges. Different inland areas have very different resource endowments and face different developmental challenges; some inland areas have done much better than others in responding to the shift of growth momentum inland. The best performers in recent years have been some northern resource-rich provinces such as Inner Mongolia and Shaanxi. These provinces rode a boom in hydrocarbon production in 2006 to 2012, and exploited their proximity to Beijing, but have found growth fragile as prices for coal and oil dropped. Some inland provinces have been beneficiaries of massive national investment programs, such as Chongqing, Hubei and Guizhou, while provinces not so well positioned, including Heilongjiang and Gansu, have lagged. In the far west, the half of the country west of the Aihui-Tengchong line that contains only 6% of the total population, the development challenge derives from limitations of water and fertile land, a sparse population and a lack of economic agglomeration and accessible markets. A completely different challenge comes in what we might call the “near west,” the areas where a dense population pushes up against rugged topography and limited land carrying capacity. In a broad belt just east of the southern half of the Aihui-Tengchong line, running through Gansu, Sichuan, Guizhou and Yunnan, China’s most intractable problems of poverty are concentrated. It is in this belt that a huge population struggles to eke out a living from an ungenerous land. This is also a belt of environmental degradation, including deforestation and soil erosion, and of especially severe economic challenges: environmental, social, and economic problems all come together in this region. Geographical conditions and the associated environmental challenges will continue to shape China’s developmental challenges and possibilities, even as new opportunities emerge.

1.7 Conclusion

As economic conditions change, and particularly as labor costs rise in the coastal regions (Chapters 5 and 8), some economic activity will move inland, and China's vastly improved infrastructure will facilitate the redistribution of activity and new patterns of urban development. Moreover, in the period around 2020, China's land connections to its neighbors will also begin to expand dramatically, creating communications and transport corridors in regions we have long thought of as frontiers and barriers. The Chinese government has launched an ambitious international program to improve infrastructure in Asia, and it will have important economic effects. A high speed rail corridor will likely extend from Yunnan down through Southeast Asia to Singapore; and connections with Russia and Inner Asia will multiply. Many of these regions have never had efficient transport networks, and we think of them as remote borderlands, but this will at least partially change. Given China's economic heft, these new transport networks connections will greatly increase China's centrality in the Asian region. The geographic endowment provides the foundation, but it is continuously being rebuilt through ceaseless economic activity, and economic growth creates new possibilities in an old land.

Climate Change Report 2011. *Second National Climate Change Assessment Report*. Science Press, Beijing.