

**The Emergence of
The World Economy**

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Towards a Historical Perspective 1000-1750*

by

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INTRODUCTION

In the waning years of the Second Millenium it is natural that our thoughts should turn to reflections of a longer term nature than we normally engage in. Indeed we already have at least one extraordinarily imaginative and stimulating book, by the Oxford historian Felipe Fernandez-Armesto (1995), that has viewed the past thousand years of the planet's history from the vantage point of a future "galactic museum-keeper," displaying vivid exhibits from a wide variety of the empires, civilizations and economic systems that have risen and fallen over that stretch of time. The theme of this and most other such reflections, implicitly or explicitly, is the role of "the West." How did it rise, expand and sustain itself for so long? Is its day now over, with the lead passing to the Far Eastern economies and societies of the Pacific Rim? Connected to this is the question of the prospects for the developing countries. Are their present economic problems a consequence of past exploitation and colonial status, or of current misguided policies of state intervention? Is the spread of prosperity and democracy to them from the West inevitable? What of the former Communist countries? Was their attempt to get a jump on history by adopting socialism and central planning a fatal error or can they eventually escape from that blind alley? Are there alternative systems of organization and belief that different societies will strive for or have we reached an "end of history" as Fukuyama (1992), perhaps rashly, predicted?

To even begin to answer any of these questions one must, inevitably, begin by looking at "history." One does not have to be a modish post-modernist, however, to understand that there is no simple objective record of the past about which we can all agree before we offer different interpretations. The economic history of even such relatively recent events as the Great Depression or the Industrial Revolution has not reached any consensus, and perhaps never will, any more than debate will cease on the causes of the decline and fall of the Roman Empire. These

These unavoidable methodological problems, however, are compounded much further when we turn to the “history of the world economy.” It would clearly be impossible to even attempt a catalogue of economic activity in every corner of the world over any significant stretch of time, nor would any one in their right mind even want to try. Any coherent narrative that we attempt must inevitably adopt a particular a priori stance before we can even begin. Immanuel Wallerstein (1974), inspired by Marx and Braudel, has so far made the most ambitious attempt at analytical interpretation, on the basis of his “world system” approach. While his work has been enormously influential in some quarters it has not been well received by mainstream economic historians. Where Wallerstein sees the sinister extension of the hegemony of the “core” of the capitalist “world-economy” over a victimized “periphery,” Eric Jones (1987) and Rosenberg and Birdzell (1985) see a “European Miracle” and “How the West Grew Rich” on the basis of enterprise, thrift and technological innovation. Despite their diametrically opposed attitudes both of these schools could be accused of adopting an excessively “Eurocentric” approach in their approach to the subject of world economic history.

While it is impossible to avoid adopting some vantage point from which to survey the unfolding of world economic history I find it useful to adopt an approach proposed a generation ago by F. Mauro (1961) in the form of an “intercontinental model.” As he envisaged it this took the form of a generalized inter-regional input-output table, with the five continents as the regions. World economic history could thus be conceived as the task of filling up these cells with the corresponding flows of exports, imports and movements of factors and precious metals between them and charting their evolution over time. The level of aggregation for the flows in question would of course depend on data availability and analytical tractability. While analysis and interpretation of what makes the flows change over time and what explains their structure at any given moment would depend on one’s theoretical presumptions, and hence be a matter of

controversy, one would at least hope for agreement on assembling the information itself, though much guesswork and estimation would have to be involved, particularly for earlier centuries.

While I cannot even begin to initiate such an approach in the present paper my subsequent observations will be in the spirit of striving towards it as a goal. At the very least such an approach would force us to think about simultaneity and interdependence in the world economy and not fall victim to the parochialism of space and time as we are prone to do from the various “national” standpoints, which is the usual perspective in economic history.

Since I must choose a time and a place with which to begin let me choose our host city of Tunis as a place and the year 1000 as the time. How did the world look then?

The Golden Age of Islam

Tunis at the beginning of the millenium was one of the more westerly outposts of Islam, which stretched from Afghanistan to Spain. Relative to the Arabian birthplace of Islam, and the origin of the conquering armies and the classical sources of its culture, the lands of what are now Morocco, Algeria and Tunisia had been an open frontier area, the home of largely pastoral nomads. The area had been highly developed in Carthaginian and Roman times, but urban civilization declined under the impact of the invasion of the Vandals and other barbarians in the fifth century. After the overthrow of the Byzantine rulers in the seventh and early eighth centuries by forces from Syria and Egypt, the region attracted settlers of all kinds from the East. These included soldiers and officials for the courts, scholars and clerics for the mosques and seminaries, as well as merchants and craftsmen to serve the newly revived cities and peasants and herdsmen seeking greener pastures.

The original population of the region were mainly Berbers, ethnically and linguistically quite distinct from Arabs and other Eastern components of the invasion force and subsequent immigrants. The urban population was Christian but the rural majority was animist. After an initial and often bitter resistance, the Berbers rather quickly seem to have converted to Islam, becoming highly austere and rigorous in their allegiance to the faith. Arabic was also adopted as the language of administration, commerce and everyday life, in addition of course to religion. This Berber component, with Punic and Roman traditions that still lingered, produced in conjunction with the linguistic and religious influence brought by the conquerors, a distinct and brilliant Arabo-Berber civilization, the legacy of which we can still admire in art and architecture, and which also left landmarks in philosophy, theology, history and even "social science," in the work of Tunis' great son Ibn Khaldun (1332-1406).

Tunis, like Fez and Marrakesh in Morocco, was a northern terminus of trans-Saharan caravan routes to the Bilad es-Sudan, the “Land of the Blacks.” At the southern terminus was the fabled city of Timbuktu and other centers of the successive Ghana, Mali and Songhai empires, which owed their wealth and power to the location of rich gold deposits within their territories. The main commodity that the primitive tribes who actually mined the gold wanted in exchange was salt, produced on the northern fringe of the Sahara along the caravan routes. The camel caravans brought cloth, weapons and salt to exchange for gold, ivory and slaves. Gold at the source was so cheap relative to salt that Arab travel writers quoted price ratios of one to one by weight. Even if this is a great exaggeration, the terms of trade must have been very favorable. The rulers of the black African empires taxed the trade, and the desert tribes such as the Tuareg extracted their own fees and “protection money” along the way. At the northern end the rulers of the Tunisian and Moroccan cities levied their own high taxes. Much of the incessant conflict and rivalries between cities, tribes and dynasties in North Africa was over control of these lucrative trade routes. From the North African ports the gold was dispersed to Spain, Sicily and Italian merchant cities like Genoa, Florence and Venice, in addition to providing the metal for the basic currency of the Islamic world, the gold dinar. Statistics do not exist for this early period, and estimates have to be used with caution, but one source states that this west African gold accounted for two-thirds of world production before the discovery of the New World. In absolute terms the annual volume reaching North African ports was estimated at about one ton.

The rents from the gold trade were supplemented by a wide range of urban manufacturing such as textiles, ceramics and glass as well as the products of orchards and plantations in addition to cereal production. The rearing of horses was also a major export sector, with the heavy demand for cavalry mounts from all over the Islamic world as well as the grass lands and deserts of Black Africa.

North Africa and its Arabo-Berber population was the source of the Muslim forces that occupied three-quarters of Spain and Sicily. The first Arab dynasty of Spain were refugees of the defeated Umayyad Dynasty in Syria but the subsequent Almoravid and Almohad dynasties in Spain were puritanical Berber warriors whose empires straddled both shores of the Western Mediterranean. In Spain they interacted with the native Iberians, the former Visigothic conquerors and the remnants of the Roman period as well as with the small but influential Jewish community that was well-adapted to serve as a cultural intermediary. This produced the brilliant Hispano-Arabic culture whose artifacts we still admire today in the Great Mosque of Cordoba and the Alhambra. In addition to flourishing agriculture based on irrigation, the revenue from the gold of the Sudan was also the economic foundation for the cultural efflorescence as well.

As Maurice Lombard (1975) has emphasized, in a superb work to which this section is much indebted, the gold of the Sudan enabled the Umayyad Caliphs of Damascus and then their successors the Abbasid Caliphs of Baghdad, to adopt and maintain for centuries a gold standard, the dinar, which became the successor to the Byzantine nomisma or denarius as the universally accepted currency of the Mediterranean. They also coined silver dirhems, at the rate of twenty dirhems to the dinar. Political, linguistic, cultural and religious unity over a vast area was thus supplemented and strengthened by monetary unity, what the European Union is still striving to achieve today. Under these circumstances it is no surprise that the Islamic World was able to achieve a spectacular economic success.

Andrew Watson (1981) has identified a “green revolution” in the agriculture of the Islamic world over the period 700-1100. The extent and geographic diversity of the original empire, combined with the unifying features of language, law and currency made people, goods and techniques highly mobile and raised productivity all around, reflecting the “gains from unification” as we would say today. Watson points out that a great number of crops and plants

from India and other eastern areas were introduced into the classical Islamic lands of Iraq, Syria and Egypt as well as the western regions of North Africa, Sicily and Spain. These included such major crops as rice, hard wheat, sorghum, cotton and sugar cane, as well as oranges, lemons, watermelons, bananas, coconut palms and several others. New strains of old plants were developed as well. Irrigation was the key to much of this, but royal stimulus and encouragement through botanical gardens and other measures were important as well. Tax incentives for investment and innovation were also given. Watson's work comes as a shock to anyone whose picture of the typical Muslim ruler is of an "Oriental despot."

One consequence of this agricultural revolution was an extensive growth of urbanization and new urban centers. Damascus, Baghdad, Sammarra, Basra, Kufa, Cairo, Kairouan, Tunis, Fez, Cordoba, Seville and Palermo were all major population centers dwarfing anything in Europe at that time. These cities served as nodes in the network of trade along which goods, ideas and people moved, like islands in a vast sea across three continents. The holy cities of Mecca and Medina saw the annual prodigious inflow of pilgrims from all over the Muslim world for the Haj. The courts of the rulers sustained lavish expenditures on luxury products of all kinds while also promoting learning and the arts. The range and density of the urban population could not have been sustained simply by squeezing taxes out of a miserable peasantry. The urban efflorescence and the agricultural revolution were two sides of the same coin, a prosperous symbiosis of town and country linked by flourishing long-distance and local trade.

Leading manufacturing industries were silk, linen, woolen and cotton textiles, ceramics, glass and leather and a vast array of food processing. Large scale production frequently took place in royal workshops to supply the court and the needs of the civil and military establishments. A revolutionary new industry was paper. The technology from China was allegedly obtained from Chinese prisoners captured at the battle of the Talas River in Central

Asia in 751 and taken to Samarkand, which was the first center for paper production in the Muslim world. It subsequently spread to many other major cities and facilitated not only administration but the growth and dissemination of knowledge.

The only significant manufactured product imported by the Islamic world seems to have been “Frankish swords.” The strength and resiliency of the steel blades seems to have been much admired, and some were even re-exported to the Western Sudan in part payment for gold. The other imports were either natural resource products such as tropical spices from South-East Asia, which could not be grown in the region, furs from Russia and silver and other metals along with the gold of the Sudan. The main import, however, was slaves, from both West and East Africa but also in large numbers from Eastern Europe, particularly Slavs. The export of these slaves to the markets of the Islamic world, mainly Cairo, was a well-organized business of Venice and other Italian cities, as well as Jewish and Christian merchants. Vast hoards of Arab silver coins have been found in Russia and Scandinavia, which must have been sent there in payment mainly for these slave imports, but also for furs and other primary products.

Thus the pattern of trade between the Islamic world and Europe, from Spain to Russia, was of the familiar “North-South” or “colonial” pattern of exchange of manufactured for primary products and labor-intensive goods, of which the most labor-intensive is of course labor itself, i.e. slaves. The difference from the “nineteenth century” pattern was that the Islamic World constituted “the North” and Europe “the South.”

Another North-South syndrome that we are familiar with is that the “North” is the source of scientific thought and that technological progress is diffused from the North to the South. Once again we find this pattern repeated in the first four or five centuries of Islam, with Islam in the role of the North. As is well known, the transmission of the philosophical and scientific work of the Greeks was lost to Europe in the Dark Ages and had to be recovered only through

of these works into Arabic. As we saw in the case of paper, Islam also served as the conduit for contemporary Chinese technology to Europe.

One should not have the impression, however, that important as it was Islamic science only served as an intermediary between other civilizations in time and space and the medieval West. Much original work was done in mathematics, astronomy, medicine, physics, chemistry and engineering. As is well known, mathematical terms such as algebra and algorithm are derived from an Arabic expression in the first case and the ninth century Arab writer al Khwarizmi in the second. It was he who wrote an early treatise on “Indian reckoning,” what we now call Arabic numerals, and who did important work on the theory of polynomial equations.

Because of its central location the Islamic world had the greatest geographical knowledge of any civilization of its time. China was at least as highly developed but its relative isolation made the Chinese not very conversant about the rest of the world apart from the “barbarians” who sent them tribute. The Muslim world, however, produced great travelers such as Ibn Battuta who have left invaluable accounts of the people and places they visited, from Vikings of Scandinavia and Russia to the black Africans of the Sudan, as well as India and China.

This central location, athwart the great north-south and east-west trade routes of the Eurasian world, meant that they could profit enormously from international trade, both by direct participation in production and as middlemen as in the case of the gold of the Sudan. Perhaps as important as this spectacular trade, if not even more so, was the one on which much of the gold obtained was spent, the import of spices from the East Indies through the Red Sea and the Persian Gulf.

The Indian Ocean and South-East Asia

Islam was born in the Arabian peninsula, with the Red Sea on the West and the Persian Gulf in the East. Control of these two vital waterways was crucial for the sea-borne trade of the Mediterranean, and thus of the European world as a whole, with the regions of the Indian Ocean and the Far East. Islamic regimes remained in unbroken control of both vital waterways from the earliest days of Islam until the European imperialism of the 19th century. They were thus able to obtain taxes and rents from the control of the entry points to the Mediterranean until the voyage of Vasco da Gama in 1498 turned the flank and got directly to the source of this valuable trade. As we shall see, the Portuguese were not able to succeed in establishing their own monopolistic control, and the trade continued to enrich Muslim rulers and their Venetian ally long afterwards, until the Dutch were finally able to dominate the trade late in the 17th century.

Using the south-west monsoon winds to sail from the Red Sea to India was an art discovered by Greek sailors and merchants based in Egypt during the reign of the Ptolemies in the 1st century BC. Before that, the trip took much longer by hugging the coast or using the north-east monsoon. A famous nautical handbook of the 1st century AD gave detailed sailing instructions about how to navigate along the coast of East Africa and to sail to Western India and Ceylon. The timber for the ships themselves came from the teak of the forests of Malabar on the south-western coast of India, which was also the source of the lucrative trade in black pepper. Arab sailors, following the Romans and Greeks of earlier centuries, sailed due east after rounding Cape Comorin to the Malay Peninsula, where goods would be trans-shipped to China in exchange for silk and porcelain. Another route was to continue through the Straits of Malacca or the Sunda Straits to the China Seas from where it terminated at the ports of Canton and Zayton. Some adventurous traders continued further north and even reached as far as Korea.

The Tang Dynasty (618-906), one of the most glorious and prosperous eras in Chinese history, was established almost simultaneously with the birth of Islam and thus the trade across the Indian Ocean flourished as a result of the increase of wealth at both ends. The Tang, after a brief interruption, was succeeded by the Sung Dynasty for the next three centuries, a period of even greater prosperity and maritime orientation for China, especially after the Sung were pushed south by the nomadic Jurchen or Chin Empire in 1126. An indication of the extent of trade between China and the Islamic world is provided by an estimate that 120,000 Muslim as well as merchants of other faiths from the Middle East were massacred in an assault on Canton by rebel forces shortly before the fall of the Tang Dynasty.

An important change from Tang to Sung times was that the Chinese themselves began to participate actively in the Indian Ocean trade. Their large and very sea-worthy junks sailed through the straits to meet ships coming from the Middle East at Quilon and other Malabar ports. The Arab merchants therefore had a shorter trip to obtain the Chinese products that they so much desired, instead of the journey for a year and a half that was required to get to China and back directly.

In addition to the teak and pepper of Malabar itself, and the silk and porcelain of China, the Arab merchants as well as the Chinese sought the exceedingly rare and precious spices that were grown only in the tiny islands of the Maluccas in the extreme east of the Indonesian archipelago. Control of this lucrative trade was in the hands of successive Indonesian trading empires that guarded it jealously. The first of these to come into historical prominence was Srivijaya, now identified as Palembang on the south-east coast of Sumatra, where its powerful naval forces were able to control access through both the Straits of Malacca and the Sunda Straits. To succeed as a monopolistic “empire of trade” a state needed not only an appropriately located harbor but also a hinterland to supply rice and other provisions to maintain the merchants

and crews, not only for their time at sea but also during the long intervals that they spent waiting for the winds to turn. Palembang was at the mouth of a river that flowed through jungle, and it had to co-operate with an inland Javanese empire of the Sailendra kings on the fertile plain in the middle of that island. This was the source of the rice needed to provision the ships that were obliged to call at Palembang if they wished to purchase valuable spices and other products. The wealth from the rents on this trade thus had to be shared with the inland Javanese kingdom, which constructed the magnificent Buddhist shrine of Borobodur early in the ninth century. Maintaining this mutually profitable alliance proved difficult, and Srivijaya was eventually overthrown after a succession of attacks on its outlying strong points by the Thais, the Chola rulers of South India and other Indonesian kingdoms.

Srivijaya was succeeded by the stronger and more centralized eastern Javanese empire of Majaphit. Its location was ideal to control the supply of cloves, nutmeg and mace from the eastern islands and the necessary rice was grown internally by irrigated lands under its direct control. The growth of commerce to and from China derived from the prosperity of the Sung was transmitted to Majaphit by its control of the trade routes. Marco Polo visited eastern Java after the fall of the Sung to the Yuan dynasty of his employer, Khubilai Khan. He was highly impressed by the wealth of the island, which must have been due in substantial measure to the revenues derived from control of the spice trade.

Both the Islamic world and China had deficits in their trade for the spices of the East Indies. The Muslims paid in gold with their dinars and the Chinese with huge strings of copper cash, which tended to drain the respective currency supplies.

One export item of the Middle East to India that was very profitable and long lasting was horses for the cavalries of the continually warring Indian states, both Muslim and Hindu. Another “strategic war-animal” in the trade of the Indian Ocean, which went back to Hellenistic

times, was in war-elephants, exported by Burma and Thailand. In addition to trade with the Chinese and Islamic extremities, the South East Asian and Indian states themselves engaged in considerable intra-regional trade of their own. Bengal and the Coromandel coast of South India exported textiles, Burma teak and rice as well as rubies and other precious stones.

One issue of major continuing interest in the history of the Indian Ocean trade is the relative importance of the Red Sea and the Persian Gulf as conduits for the valuable imports coming from the East. Would the rents and taxes be shared between Aden and Cairo on the one hand or Hormuz, Basra and the intermediate port of Siraf on the other? A lot depended on the relative military power of the regimes in control of Egypt, in the first case, and Syria and Iraq in the second. Under a unified empire such as that of the early caliphs, the division probably turned purely on relative cost and convenience. At other times it would shift with the balance of political power, just as between Srivijaya and Majapahit at the eastern end of the route. A.R. Lewis(1973) has also pointed out that the spread of Islam in East Africa, Malaya and Indonesia that took place after about 1200 increased the relative importance of the Red Sea, because of the annual flow of pilgrims to the holy cities of Mecca and Medina. The Mamluk sultans of Egypt also undertook energetic measures to attract the spice trade to Alexandria in order to extract revenue more effectively. Digby (1982) argues, however, that the Persian Gulf route maintained its relative importance.

All the newly rising states in South East Asia, such as Pagan and Pegu in Burma, Ayuthia in Thailand, Angkor in Cambodia as well as the Sumatran and Javanese principalities were anxious to attract merchants and trade for purposes of taxation and so were willing to fight to gain control of trade routes. In addition to the competition between Java and Sumatra for control of the straits, there was continuous conflict between the Burmese and the Thai for the transshipment trade across the Isthmus of Kra. The aggressive Cholas of the Coromandel coast

of India also engaged in raids not only on nearby Ceylon but on Burma, Malaya, Sumatra and Java as well.

It would be misleading, however, to read into these events anything like the commercial struggles between Venice and Genoa, for instance, or the Anglo-Dutch wars of the seventeenth century. Agriculture was the main occupation and activity of most of these states, with the possible exception of Srivijaya. Taxation of the peasants was the main source of revenue. But for most of them, trade was an attractive supplement to land revenue, as well as a source of “prestige” goods for the court such as Chinese silks and porcelain, or strategic assets such as horses, elephants and weapons.

Sung China: An Aborted Take-Off?

China at the turn of the first millennium, just as now at the turn of the second, was undergoing an unprecedented economic expansion, under the auspices of the Sung Dynasty that came to power in 960 after a period of disunity following the fall of the Tang Dynasty in 918. The Tang, one of the most glorious periods in Chinese history, had seen the economic center of gravity or "key economic area" as defined by the influential work of Chao-Ting Chi (1936), shift from the Yellow River basin in the North to the region of the Yangtze valley and the area to the south. While the political and military locus of power continued to be the north, the two regions were linked by extensive canals and other waterways, most notably the famous Grand Canal. Millet and wheat were the grains grown in the north but rice was the staple in the south. The naturally higher yields per acre obtainable from rice were supplemented by the introduction of a new strain, so-called "early-ripening rice" from Champa in what is now Viet Nam. This enabled double and even triple cropping to be introduced, and production rose sharply as the new seeds and subsequent strains were diffused over the entire south from the province of Fukien, which was the first to adopt the Champa variety.

This agricultural revolution led to a massive increase in the population of China from the 50 million or so it had been at the height of the Tang in 750, less than the 60 million it was estimated to be under the Han Dynasty at the beginning of the first millennium, to well over a 100 million in the eleventh century under the Sung. Population continued to expand, possibly doubling by around 1600. As Mark Elvin (1973) has plausibly argued, this can be seen as the operation of a classical Malthusian-type model of population growth eventually wiping out gains

in productivity but in the eleventh and twelfth centuries under the Sung the lag was long enough to have led to a remarkable burst of prosperity that saw a great extension of trade, specialization and markets accompanied by technological change in industry and transportation as well as agriculture and a notable increase in urbanization. The huge cities that so impressed Marco Polo were created by the Sung, whose dynasty was overthrown by that of his employer, Khubilai Khan, the grandson of Genghis Khan and the first ruler of the Mongol Yuan Dynasty.

As the work of Y. Shiba (1971) and many other Japanese economic historians has demonstrated, China under the Sung was a thriving, bustling, buoyant economy with highly diverse regions and cities, each specializing on what it was best suited to produce or grow, linked together by an incredibly sophisticated network of merchants, brokers and other commercial agents, and served by what must have been by far the most voluminous and convenient system of water transport in the world. This achievement is all the more remarkable in light of the fact that the entire history of the Sung was marked by almost continuous conflict on its northern borders with powerful nomadic states. It is astonishing that the size of the Sung army, used mostly for defense against the inroads of the nomads, was of the order of 1 1/4 million. This was a crushing burden for the economy to bear, and despite a succession of very able statesmen the Sung first had to abandon China north of the Yangtze to the Jurchen nomads in 1126, and eventually fell to Khubilai Khan and the Mongols in 1279.

By general agreement among Sinologists the Sung era represented the height of the achievements of Chinese civilization in the arts, literature and philosophy as well as in economics, technology and public administration. Its fall to the Mongols therefore represented a tragic setback to what could have been a breakthrough to modern industrial society and civilization well ahead of the West. The Mongols themselves became increasingly Sinicized

during the remaining hundred years or so of their rule, and they attempted to continue many of the trends begun under the Sung, such as an interest in sea power and maritime commerce. When they in their turn were overthrown in 1368 by the native dynasty of the Ming, the new rulers could never be free of the nomad threat on their northern and western borders. After initially supporting the "outward-looking" maritime orientation of the Sung and the Yuan, and launching the great series of voyages in the Indian Ocean to the Red Sea and the coasts of Africa, they once again turned inward. In the intellectual sphere there was a revival of Confucian orthodoxy and the pragmatic, experimental spirit of the Sung was discarded.

Paradoxically, it may have been the very threats that they faced on their land frontiers that made the Chinese of the Sung era turn in novel directions. In the previous great ages of the Han and the Tang China had interacted with the West through the caravan trails of Central Asia.

It was by the Silk Road that China received the impulses of Buddhism, Islam and Nestorian Christianity, for example, as well as a variety of artistic and technological innovations. When access was cut off by the presence of the powerful semi-nomadic states of the Western Hsia and the Khitans in the north-east, it was natural that they turn to that other avenue, the sea. Trade with Korea and Japan increased under the Sung, but the main channel of contact was to the south, with Java, Sumatra and other Indonesian isles, Annam and Champa in Vietnam, and ultimately with the lands of the Red Sea and the Persian Gulf. During the Tang it was the Arabs and Persians who came all the way to China in their own ships. Under the Sung the Chinese built their own ocean-going vessels, the great junks with three or four masts, watertight compartments for their hulls, stern-post rudders, movable sails and other nautical innovations far in advance of anything anywhere else in the world. Navigational skills, based on the mariner's compass, star charts, knowledge of winds and currents were all also highly developed.

As pointed out by Jung-Pang Lo (1955, 1969) China's emergence as a sea-power during this era was marked by a symbiosis between maritime commerce and naval warfare. Particularly after they were pushed out of North China by the Jurchen, the so-called Southern Sung Dynasty (1127-1279) relied for their defense on clever strategic and tactical use of the complex waterways of rivers and canals. This reliance on water for transport of troops was made all the more necessary because the cavalry arm was crippled by losing access to the supply of horses from Central Asia. As a leading official said in 1113 "The sea and the Yangtze River are the new Great Wall of China, the warships are the watch-towers and the fire-arms are the new weapons of defense."

These fire-arms that the Sung developed out of necessity to resist the traditional cavalry attacks of their nomad opponents were the clear antecedents of the artillery and musketry that transformed the art of war in the West a couple of centuries later. They were based on the use of gunpowder to provide an explosive charge and the use of guided projectiles launched from tubes of one kind or another. Chinese war-ships relied for their fire-power on archers and crossbowmen, supplemented by the use of explosive grenades, rockets and flame-throwers. By the familiar dynamics of armed conflicts, these weapons and tactics were also adopted by the Jurchen and the Mongols against the Sung, and the Mongols later themselves took to the sea in their unsuccessful invasions of Japan and Java.

China exported porcelain, silk and other Chinese manufactures to South-East Asia in exchange for spices, medicinal herbs and other natural-resource products. Lucrative as the South-East Asian spice-trade with the Middle East and Europe was, it must have been dwarfed by the volume of the trade with China. The much greater population and the higher incomes of

at least the upper classes in China, as well as the greater proximity to the sources of supply, must have made it by far the greater market for these exotic products of world trade.

Associated with this trade was a class of very wealthy merchants and ship-owners, many of whom seem to have been Muslims of Persian or Turkish origin who settled in China. The state itself was both a help and a hindrance to the lucrative maritime trade of the era. On the one hand it wanted to promote an increasingly important source of revenue, from customs duties as well as resale of imports that it purchased at fixed prices from the merchants. On the other hand, the exigencies of war made it necessary to frequently requisition the ships to serve as naval vessels or transports. Finally, in the pragmatic spirit characteristic of so much in the Sung era, a compromise was worked out whereby ships were rotated between civilian and military use. The government assisted the "private sector" by construction of harbors, warehouses and other facilities, as well as beacons and lighthouses along the coasts. These measures seem to be forerunners of the well-known collaboration between government and business that many have seen as characterizing the "East Asian Miracle" of our own times. They are very far indeed from the traditional picture of "Oriental Despotism." More than any other dynasty the Sung emperors appeared to have been genuinely interested in the welfare of their subjects. They scrupulously preserved the independence of the high officials and indeed appeared to think of themselves as "chief administrators" rather than absolute monarchs.

Another major "defense-related" industry was iron and steel. The researches of Robert Hartwell (1962, 1966, 1967, 1982) have established the existence of a remarkable spurt in the production of iron and steel in China during the Northern Sung (960-1126). The scale of total production, and of output and employment in individual plants, was far in excess of anything attained before England in the eighteenth century. Hartwell estimates that iron production in

China in 1078 was up to about 150,000 tons annually. It is astonishing to note that the entire production in Europe in 1700 was not much above this, if at all. The growth rate of Chinese production was also remarkable, increasing twelve-fold in the two centuries from 850-1050.

Iron coins, which supplemented the usual copper coins in some areas of Western China, absorbed about 10,000 tons of this output. Another major use of iron was for plough-shares, sickles and other agricultural implements. This naturally raised productivity per worker in the agricultural sector. The biggest demand of all, however, probably came from the military for weapons and armor. Thus one consequence of the loss of the North to the Jurchens after 1126 was the metallurgical capacity concentrated near the Northern Sung capital of Kaifeng, around which were substantial deposits of iron ore and coal. This conjunction of natural resources with the huge market of the capital made it possible to take full advantage of economies of scale. The population of Kaifeng appears to have been around 750,000 in 1078. It could not have been sustained without the supply of grain from the south through the Grand Canal. Cheap water transport was thus doubly important for the iron and steel industry around Kaifeng. It not only lowered the cost of moving inputs in and products out, but also led to a heavy concentration of demand for both public and private uses. The industry seems to have employed a full-time labor force and to have been marked by a sharp cleavage between the interests of the wage-earners and the wealthy iron-masters who employed them. These probably came from the land-owning gentry class, many of whom however may have been newly rich entrants to this privileged group.

Chinese dynasties traditionally relied on agriculture as the main source of revenue. The extensive commercial and industrial activities under the Sung, however, meant that taxes on trade came to play an increasingly important role. The Southern Sung, in particular, seem to

have drawn the bulk of their revenues from trade taxes and the profits of state monopolies rather than taxes on land. Of the state monopolies the most profitable were salt and the national drink, tea.

The Pax Mongolica and the Unification of the Eurasian Continent

The Mongols are still perhaps best remembered for their ferocity. There is no doubt that they did much to deserve this, from one end of the then known world to the other. A strong case can be made, however, that the long run consequences of their conquests were favorable to the progress of the world. How can such an apparently paradoxical conclusion be reached?

The basic argument is that the extent of their conquests across the Eurasian land mass created for the first and indeed only time in history, a single regime presiding over the entire length of the overland trade routes linking China and the Near East. This made it possible for merchants and goods to move safely over these vast distances, facilitating the transmission of ideas and techniques. Since China was substantially ahead of both Islam and the West in the general level of its technology this flow chiefly benefited the lands at the western ends of the trade routes and beyond.

Joseph Needham (1954, p. 140), the great historian of Chinese science and its influence on the west, states that: "China under the Yuan became better known to Europe than at any previous or subsequent time until the twentieth century. This was because the region under Mongol control extended for the full breadth of the heartland; it was the first and the last time in history that the whole area north of the Himalayas from Shanhaikuan to Budapest and from Canton to Basra was under one political authority. The roads across Central Asia were busier and safer than ever before or since." Their own mobility and lack of commitment to any particular location or mode of production made them highly "rational" or "universalist" in their attitudes toward economic activities. They were willing to use the talents of any foreigner who was best for the job. Thus we have instances of their using Arab and Persian generals and

administrators in China, and Chinese siege engineers in their assaults on Baghdad and other Muslim cities. They were also highly tolerant in matters of religion and were natural supporters of "free trade," benefiting from the free flow of goods and factors across their domains, since this enhanced the wealth that they could extract for themselves as the privileged caste of their empire. In this they resembled their predecessors the Romans and their successors the British.

The slaughter and destruction they unleashed in China and particularly on Baghdad when they overthrew the Abbasid Caliphate in 1258 made it plausible to consider them as the exogenous force that terminated the spectacular expansion of the Sung and the golden age of Islam, leaving the field open for the Western Europeans, who got off lightly, to eventually overtake these initially much more advanced civilizations. The balance of current expert opinion, however, does not support this view. Bernard Lewis (1993, ch. 15) points out that the Abbasid Caliphate had long been in decline before the Mongols killed the last Caliph of Baghdad. Classical Islam was not able to work out a stable political succession and power passed to mercenary and slave soldiers with the Caliphs themselves as figureheads. The Seljuk Turks, in the eleventh century, were the effective rulers in Iraq and Syria. Economic difficulties also preceded the impact of the Mongols, which was particularly devastating in Iran and Iraq. The center of gravity of the Islamic World passed to the Egypt of the Mamluks, who defeated the Mongols at the Battle of Ain Jalut in Palestine in 1260. This gave Cairo and Alexandria the benefit of the Indian Ocean trade. On the Sung, the historian Ray Huang (1990) is skeptical of claims that they had launched a true "renaissance" or "revolution" comparable to what was achieved later in the West. He says (p. 133): "In the experience of Europe, such a breakthrough came at a moment when the influence of commerce outweighed that of agricultural production

by some margin. China in the early modern era did not come close to this jumping-off point. Commerce, even though large in volume by world standards, was spread thin over the mass of peasants." The Ming, who ruled China from 1368 to 1644 as a purely native Chinese dynasty, were unable to achieve this breakthrough almost three hundred years after the Mongols.

The volume of trade across the overland routes does not appear to have been great, despite the greater safety. Probably it could not compete in terms of cost with the overseas route. Nevertheless there was considerable exchange of ideas due to the visits of papal envoys to the courts of the Khans, as well as the travels of merchants such as the Polos. The fact that technological change in Europe accelerated so rapidly during this period is ascribed by Sinologists such as Needham, but not only by him, to transfer westward from China. The evidence, perhaps inevitably, is of a "circumstantial" nature. Thus we know that the Chinese had already invented movable type, the mariner's compass and so on before the West. Now that a possible channel of communication had been opened, and the innovations appear in the West with a substantial lag, Chinese influence is certainly possible and plausible. Direct evidence, however, is mostly lacking. Despite the authority of Needham's awesome erudition it is possible to make a case for independent discovery by Europe. As Hudson (1961, p. 168) argues, however, the burden of proof should be on those who claim independence, not on those like Needham who assert Chinese influence.

The other side of the coin of the Mongols' flexibility and pragmatic readiness to use whatever people or methods was best was that they tended to be absorbed by the more advanced civilizations that they conquered. Unlike the Arabs, whose own language and religion were generally taken over by their subjects, the reverse was the case with the Mongols, despite their

attempts to maintain themselves as an aloof ruling class. The societies they ruled and parasitically exploited were deprived of any internal dynamic and thus the burden of their exploitative policies eventually proved insupportable. It was Western Europe that received, as an "externality", the benefit of the transfer of Chinese technology from the Pax Mongolica, without having at the same time to endure the burden of the "Tartar Yoke," which pressed heavily on the Chinese, the Iranians and the Arabs, as well as the Russians under the Golden Horde.

The Emergence of Western Europe 1000-1350

Western Europe in the year 1000 was the least developed of the major regions that we have surveyed. Despite the legacy of Rome, there were no cities to compare with Baghdad or Cordoba, Kaifeng or Hangchow. For the previous two centuries the region had been devastated by the raids of the Vikings in the North and West, the "Saracens" in the south and the latest wave of steppe nomads, the Hungarians, in the east. Trade had declined, the Roman towns were depopulated and any form of central administration had all but vanished. Life had become almost overwhelmingly rural. The insecurity of the times led population to cluster around castles and abbeys. Rural labor consisted mostly of enserfed peasants, toiling on their own plots and performing the required dues on the manorial estates of the feudal lords. Literacy was low and confined almost entirely to the clergy. Knowledge was confined largely to the scriptures, the scientific and philosophic achievements of the ancients being largely forgotten. In short, the familiar images conjured up by the traditional designation of this period of European history as the "Dark Ages."

Already by the middle of the ninth century, however, population had begun to expand. The Viking raids ceased after those fierce pagans had been converted to Christianity and, in some cases, absorbed into Western Latin society as with the Duchy of Normandy. The Hungarians, after their defeat at the Battle of Lechfeld in 955 at the hands of the German Emperor Otto, also adopted Christianity and settled down in the eastern plains. The frontier between Islam and Christendom had also been stabilized, though there were substantial Muslim kingdoms in Spain, Sicily and other Mediterranean islands.

Two significant technical innovations had been introduced, the heavy iron plough and the horse collar. Where the soil was suitable, as in northern France, Germany and eastern Europe, these raised the output per worker substantially. The yield per acre, however, was generally very low. Adoption of a "three-field" instead of a "two-field" rotation mitigated this, but at the expense of exhausting the soil. The area under cultivation was considerably expanded, particularly in Germany and eastern Europe. The relative abundance of land also led to extensive sheep rearing, in England and Spain particularly. The cultivation of the vine also expanded rapidly, especially after the rising productivity in cereal cultivation raised the incomes and rents of land-owners and urban dwellers. The geographical diversity of the various regions of Europe led to beneficial specialization and trade, bringing with it a revival of towns and urban pursuits. The balanced self-sufficiency of the Dark Ages gave way to concentration on wine, wool and other products in regions with the appropriate comparative advantage, with importation of the necessary food supplies. Much of the benefits of the expansion went to swell the rents and taxes of the feudal lords and the monasteries and churches, as well as the revenues of the nascent states, which further enhanced and diversified the pattern of demand. Specialized manufacturing regions emerged, particularly the woollen industry of the Flemish towns.

The following table (see next page), based on Russell (1972, Table 1), indicates some interesting data on population, in millions.

<u>Region</u>	<u>Year 1000</u>	<u>Year 1340</u>
Italy	5	10
Iberia	7	9
Greece and Balkans	<u>5</u>	<u>6</u>
Total-south	<u>17</u>	<u>25</u>
France and the Low Countries	6	19
British Isles	2	5
Germany-Scandinavia	4	<u>11.5</u>
Total-west and central	<u>12</u>	<u>35.5</u>
Russia	6	8
Poland-Lithuania	2	3
Hungary	<u>1.5</u>	2
Total-east	<u>9.5</u>	<u>13</u>
Total Europe	38.5	73.5

Thus total population in Europe almost doubled over the period from 1000 to 1340. In France and the Low Countries it more than tripled, reflecting the fertile soils of France for grain

and wine and the prosperity of the woollen industries in Flanders. Germany also expanded rapidly, with its extensive frontier in the East, and the British Isles also grew by a factor of 2.5. Italy, which was economically the most advanced region, only doubled in population, probably because it was more highly urbanized (with a higher death rate) and because there was relatively less room for expansion initially.

For China from 950 to 1250, roughly the period of the Sung Dynasty, Feuerwerker (1990, Figure 9.1) reports growth from 66 million to 115 million. This is roughly comparable with the European expansion from 38.5 to 73.5 millions shown here. Both time periods, as we have seen, were marked by significant improvements in agricultural productivity, "early-ripening rice" in the one case and the heavy plough and the horse collar in the other.

The most remarkable aspect of the general European expansion in this period was the rise of the trading cities of Italy, particularly Venice and its great rival Genoa. They represented a quite unique phenomenon in world history. The city-state itself, of course, goes back to the beginnings of civilization in Mesopotamia and was the basic form of social and political organization in classical Greece. What then was special about Venice and Genoa?

One essential feature was their political autonomy. Unlike Basra or Canton they were not contained within large territorial states but were sovereign entities. Unlike Athens and Sparta, which of course were sovereign, they were trading cities, living by long-distance trade. The classical Greek city-states were all based on ownership and exploitation of the surrounding land. Trade was left to resident aliens, the metics, who were completely excluded from political activity. Thus it was only in the maritime Italian city-states that mercantile or "capitalist" interests were not just one element or faction in a polity that had to compete with other powerful

groups for recognition. They simply were the state, and state policy was tantamount to maximizing the long-run advantage of the commercial interest. Of course differences were bound to develop within the general mercantile community between individual sectors, and so state policy had to strike a balance between them. But overall, economic objectives predominated, to an extent unmatched in history, except perhaps by the Dutch Republic after it won independence from the Hapsburgs.

Before launching on its spectacular career as "Queen of the Adriatic," Venice was a community of boatmen confined to the lagoons at the mouth of the River Po. The people made a modest living by fishing and making salt from the sea, which they traded up-river for grain and other products. They were under the administration of a Byzantine duke or "doge," supplemented by a few tribunes. Their advantageous location at the head of the gulf, close to the Alpine passes, was beneficial for trade in timber and there also grew up a flourishing traffic in Slav captives from the Balkans. Both slaves and lumber found ready markets in the Islamic world as well as Italy. Politically, Venice became independent of the Byzantine empire but served as a loyal ally in the conflicts of the empire with the aggressive Normans of southern Italy. The reward for Venice was trading privileges and customs tariff reductions within the lands of the eastern empire. These formed the basis of profitable re-export trade to the hinterland of Italy, and also brought German merchants to Venice where they were housed in the famous Fondaco dei Tedeschi. They exchanged metal products and silver for the eastern wares that they took north.

Venice's location would have meant little if other ports on either coast of the Adriatic were allowed to compete on equal terms. In order to be able to extract the maximum rents on the

east-west and north-south flows of trade, Venice had to have command of the Adriatic, so that all the trade could be channelled through her. In other words, an effective monopoly over exports and imports could only be maintained by naval power. From the eleventh century to the sixteenth, Venice became and remained a major naval power in the Mediterranean. Most of her merchant vessels were armed, and substantial fleets of warships were always maintained for combat and convoy duties.

The start of the Crusades created vast new opportunities for Venice and the other maritime city-states in Italy, particularly Genoa and Pisa. While the troops themselves were mostly northern knights and men-at-arms, the Italians provided indispensable transport services, finance and military assistance in the form of siege-engines and other instruments of war. In return they were granted substantial territories and rights in "Outremer" or "Beyond-the-Sea" as the Crusaders called the eastern lands that they were allegedly liberating from the infidel. The shrewd Venetians declined substantial territorial possessions on the mainland, preferring to take their reward in strategically located islands and other points where they could control and defend the trade routes. They also had no compunction about raiding Byzantine territory if they felt dissatisfied with whatever commercial privileges they were granted. They also fought regularly with their commercial rivals, the Pisans and Genoese.

The Venetian plunder of the Byzantine empire culminated in the infamous Fourth Crusade of 1204. Instead of attacking the Muslims, the Venetians and their northern allies found it more profitable to sack Constantinople itself and to install a so-called Latin emperor. Venice's share of the loot was three-eighths of the land and treasure of the Byzantine empire. Once again she chose well, taking the island of Crete and the famous bronze horses that still adorn the

cathedral of San Marco. She was also now able to enter the Black Sea and take advantage of the profitable trade in grain, furs, fish and yet more slaves.

Despite all the warfare of this turbulent period, it is interesting to note that commercial relations continued, with only momentary interruptions due to papal injunctions or political instability. In addition to importing silk and other luxury products from Constantinople for resale to the West, the Venetians obtained Eastern spices, medicines and perfumes through the familiar channel of the Red Sea. Since most of the Indian Ocean merchants were Muslims, they frequently unloaded their goods at Jiddah, the port serving the holy cities of Mecca and Medina. From there caravans took the goods to Damascus and Acre, the port held by the Crusaders. In return for these goods the Venetians sold the traditional wood, metal and slaves but also an important new product, the woollen cloth of Flanders and other European manufacturing towns. Some trade also took place at Alexandria, of eastern goods that were shipped through Egypt from ports on the western coast of the Red Sea.

Genoa, at the western corner of the Italian peninsula, had a somewhat symmetric location to Venice, with the western instead of the eastern Mediterranean as her natural outlet. She took an active part in the Christian resurgence of the eleventh century, raiding the North African coast and engaging the Muslims at sea. This militant tradition also led her, together with Pisa, to participate more energetically than Venice in the First Crusade. The triumph of Venice in 1204 cut her out of the eastern Mediterranean but Genoa made a strong comeback in 1261, when the Byzantines recaptured Constantinople with substantial naval assistance from Genoa. As a reward, she obtained access to the Black Sea and key strategic colonies at Pera, opposite Constantinople itself, and the island of Chios. In the Black Sea she established outposts at Caffa

and at Tana on the Sea of Azov. This opened up lucrative trade in grain, fur and slaves with Southern Russia and also enabled her to take advantage of the Pax Mongolica and the overland trade with China. New export items from the Byzantine and Syrian territories were cotton, alum, an important input for woollen manufacture, and mastic from Chios, used in preserving paint and cosmetics. Venice continued to compete with Genoa in the Black Sea area. It was during this period that the Venetian Marco Polo made his famous journey overland to China. While the Genoese were in favor with the Byzantines at Constantinople, the Venetians became the closest trade partners of the Mamluk sultans of Egypt, who had checked the westward advance of the Mongols in 1260 at the Battle of Ain Jalut, near Nazareth in Palestine. The Mamluks, slave soldiers of mostly Turkish and Slav origin, relied on the Venetians and Genoese to provide them with a steady supply of potential new recruits in the form of young captives from the Black Sea region, in exchange for spices from the Red Sea trade, over which Venice was controlling the lion's share of re-exports to the West.

Both Venice and Genoa were involved in a major revolution in nautical technology during this era. Ships become substantially larger and more maneuverable because of the adoption of the stern-post rudder. More importantly, the adoption of the mariner's compass made possible sailing by "dead reckoning," without the necessity of having to observe the stars in order to steer. As Frederick C. Lane (1963) pointed out in a brilliant article on "The Economic Meaning of the Invention of the Compass," this made it possible to sail in winter, during which time ships had been idle because clouds and fog obscured the stars and coastal landmarks. With two voyages a year instead of one, shipping tonnage was effectively doubled.

The Genoese in this period were at the peak of their maritime and commercial activities. In addition to their exploits in the Black Sea to the east, they continued their earlier combination of raiding and trading with the North African cities. They were eager purchasers of the gold that continued to enter the Mediterranean from the Saharan caravans, and they even ventured deep into the interior, to the oasis city of Sijilmasa, in the attempt to get closer to the source. They also explored the Canaries and other Atlantic islands, and pioneered the sea routes from the Mediterranean to England and Flanders. Their ships took raw materials such as alum and cotton, as well as spices and other luxury products from the east, to the ports of the English channel and the North Sea, bringing back wool and woollen cloth for Italy as well as re-export to the east. The Venetians, not to be outdone, followed suit.

Thus the period from 1260 to 1350 saw the emergence of a genuine "world-economy," as Janet Abu-Lughod (1989) has emphasized. The links of trade and exchange extended from the British Isles to China, Indonesia and Africa south of the Sahara. The Italian cities were at the center of this system and Italy was, with Flanders, the most highly developed part of Europe at this time. Venice, Florence, Milan and Naples, with populations of over 100,000, were the largest cities in Europe. This is why the testimony of Marco Polo, on the wealth and magnificence of China, was so significant as an indication of the primacy of the east in his time.

The economic progress made by Western Europe as a whole during this period was effectively symbolized by the return to gold coinage after a lapse of centuries since the fall of the Roman empire. In 1253 both Genoa and Florence introduced gold coins, followed by the Venetian ducat in 1284.

Economic Consequences of the Black Death

Up to now we have stressed only the benign consequences of the unification of the Eurasian continent achieved by the establishment of the Mongol empire. The very same process, however, was intimately related to perhaps the greatest biological disaster ever to befall mankind, the outbreak of plague in the mid-fourteenth century known as the Black Death. The same forces that made goods, techniques and ideas more mobile along the great trade routes also unfortunately made it easier for the plague germs to travel. Formerly confined to rodent populations in remote regions, possibly in the Yunnan province of China where it borders on India and Burma, the plague germs were apparently transmitted to Central Asia by invading Mongol troops on a punitive expedition to Burma in 1253, according to the hypothesis of William McNeill (1977). Eventually the disease was transmitted across Central Asia to the port of Caffa on the Black Sea, an important Genoese trading post as we saw in the previous section. From there it was carried by a Genoese vessel to Messina in Sicily and then to the Italian mainland, as well as to Alexandria and Cairo. From both shores of the Mediterranean it was carried to the ports of England and Flanders, and thus eventually to the whole of Western Europe, after which it spread overland to the east.

The death rate of the initial outbreak is estimated to have been at least a third, and the plague recurred in waves of mostly diminishing intensity to the end of the sixteenth century. Cipolla (1994, p. 131) states that it killed about 25 million out of a total population of about 80 million in the period 1348-1351. Gottfried (1985, p. 133) claims that over the century from the initial outbreak to 1450 the plague caused the European population to decline by between 60% and 75%, which seems astonishingly high. Russell (1972, p. 36, Table 1) shows the population

of Europe falling from 73.5 million in 1340 to 50 million in 1450, a much smaller and more plausible decline, though still drastic. It was not until the sixteenth century that the European population again reached its original level.

The immediate economic consequences of the initial catastrophe would clearly be a decline in a total production but a rise in per capita output, since land and physical capital are fixed and it is plausible to assume diminishing returns to labor. Thus we ought also to have a rise in real wages and declines in the rent per acre of land and the return to capital. Holding relative product prices constant and using the Rybczynski theorem, we would expect the supply of labor-intensive goods to contract and of land and capital-intensive goods to expand. If the income-elasticity of demand were neutral between these types of goods, we would expect labor-intensive goods to rise in price and land and capital-intensive goods to fall in price, thus leading once again to a rise in the real wage and declines in the returns to land and capital. With the rise in per capita incomes we would expect the demand for highly income-elastic luxury goods to rise relatively to those of basic goods such as food and other necessities.

With these simple neoclassical predictions in mind, what would one expect the consequences of the Black Death to be? The historians who have studied this question have carried on a long-standing debate on the question of whether the European economy in its aftermath was expanding or contracting. Lopez and Miskimin (1962) assert that there was a depression during this period, which ironically coincides with the cultural efflorescence of the Renaissance. Lopez (1953) attempts to explain the apparent paradox in an ingenious article entitled "Hard Times and Investment in Culture" by arguing that it is the former that induces rational businessmen to undertake the latter. Cipolla (1964) is highly critical of their argument and its supporting (admittedly meager) evidence, which he finds to be erroneously based on

thinking in "total" rather than "per capita" terms. While I find Cipolla's position more in line with what one would expect on a priori theoretical grounds, Lopez and Miskimin do make a good case on the basis of the slender quantitative evidence available. Their argument is further amplified and elaborated in Miskimin (1975), on which I also draw in what follows.

The fact that real wage-rates rose substantially seems pretty clear. England has the best available statistics, effectively deployed by Hatcher (1977). He presents a graph (Figure 2, p. 71) of the estimated population and the real wage-rate from 1250 to 1750. The real wage-rates are from the series by Phelps-Brown and Hopkins (1956) for building craftsmen. The graph shows population falling from a peak of close to 6 million shortly after 1300 to a trough of barely above 2 million in about 1460, after which it rises to only about 5.5 million by 1750, i.e. the 1300 level is not recovered four centuries later. Even more astonishing is the real wage curve. It doubles from 1350 to 1460 and then falls back to its original 1350 level by 1750. The maximum real wage coincides with the minimum population at around 1460. The 1460 real wage-rate was apparently not attained until after the middle of the 19th century.

Qualitatively very similar trends for real wages as in England are indicated for building workers in the construction industry in Florence by Goldthwaite (1980). He reports (p. 334) that the real wage was about 50% higher than the 1360 level from 1420 to 1470 and then begins to fall. By 1600 wages were as low as they had been on the eve of the Black Death. Chapter 6 of Goldthwaite's book, on labor, gives a wealth of fascinating information on working conditions in the Florentine building industry, indicating a highly sophisticated "capitalistic" labor market with minutely detailed contracts. The very flexibility of the real wage in response to population movements, in both England and Florence, clearly shows the untrammelled operation of market forces, unmasked by any institutional restraints that one might expect in the Middle Ages.

Attempts by governments to regulate wages, such as the Statute of Laborers in England, were utter failures.

The relationship between rents per acre and population is broadly inverse to the relationship with real wages, as we would expect. Rents did not fall as sharply immediately after the Black Death as one would predict, but they eventually declined to a trough around the middle of the fifteenth century, at the same time as the real wage attained its peak. [See Hatcher (p. 36-44) for details.]

The information that we have on the structure and composition of output also corresponds to a considerable degree to what we would expect from pure theory. Within agriculture there was an expansion of land-intensive production such as the rearing of sheep and cattle, relative to wheat. The cheapness of wool and the high income-elasticity of demand for woollen cloth, particularly those of better quality, led to a boom in the woollen textile industry. The raw wool was produced in the relatively backward "periphery" of England and Spain, while the weaving of cloth was concentrated in the towns of Flanders. Florence specialized on finishing and dyeing, and on manufacture of the highest quality products. The rulers of the nascent states were fully aware of the opportunities and problems presented by this growing international division of labor. In England Edward III financed his campaigns in France during the Hundred Years War with an export tax on raw wool. This raised the price to the Flemish weavers but lowered it domestically for the infant English cloth industry. The result of this "effective protection" was that English exports of raw wool steadily declined but were more than made up for in terms of value by the exports of woollen cloth, in competition with Flanders and Italy. [See Cipolla (1994, p. 260-61)] Edward III also allied with the other major wool exporter, Castile, to declare an embargo against Flanders which was under the sphere of influence of his

enemy the King of France. Exports were eventually resumed but on terms more favorable to the English [see Miskimin (1975, p. 93)].

The higher income-elasticity of demand for wine and beer, in comparison with wheat, dictated a relative expansion of vineyards and the cultivation of barley, an input into beer. Barley was also important as fodder, and livestock raising also expanded relative to wheat during the century or so after the Black Death. The population that survived the continuing ravages of plague and other diseases was undoubtedly better fed, clothed and housed than before the calamity struck.

Again, as we would expect, the greatest stimulus to production was in luxury commodities of all kinds. Furs, particularly ermine, sable and marten, fetched exorbitant prices and led to a booming trade of the merchants of the Hanseatic League of Baltic cities with Russia. Miskimin (1975, p. 138) reports that 450,000 furs were shipped from Riga to Bruges in 1405, and Riga was not the only source of supply. The silk industry was perhaps the greatest beneficiary of the rise in per capita income and wealth. For most of the period the silk industry was an Italian monopoly, increasingly taking the place of the woollen industry which was under pressure from Flanders and England.

Spices, jewels and ivory were also largely an Italian monopoly since Venice controlled the access to the sources in the Orient. The commercial and financial sophistication of the Italian merchants made them dominant throughout Europe, indispensable and unpopular in England, Holland and Germany. High finance, then even more than now, was a highly risky business. Fortunes were made, but the great banks of the fourteenth century, of the Bardi and the Peruzzi, were bankrupted when their client Edward III defaulted. The Medici subsequently took their place as the leading bankers of Italy and therefore of all of Europe.

Another major facet of the dominance of Italy during this period were the massive remittances from the rest of Europe to Rome of the rents, tithes and other dues received by the Church. Not only was the church the greatest landowner in Europe but also the recipient of gifts and donations which were particularly large in view of the high death-rate. The Kings of England and France, desperate for revenue to wage their wars, attempted to restrict these transfers which nevertheless continued on a large scale. The Medici, as bankers to the Popes, naturally profited from the management of these funds.

While Italy's comparative advantage was in luxury manufactures, such as silk and high quality woollens, supplemented by Milan's export of expensive arms and armor to the feudal chivalry of Europe, other regions were specializing on the provision of more basic necessities. The Baltic region exported grain, timber and salted herring, in addition to the furs mentioned previously, and England and Spain exported wool. Germany and Central Europe exploited their silver, copper and iron mines while the towns of southern Germany such as Augsburg and Nuremberg began to rival the Italians in banking and the manufacture of luxury metal products. Sicily and southern Italy lost their previous comparative advantage in wheat to northern Europe, and in sugar and sweet wines to the newly discovered Canaries and Madeira.

In terms of the precious metals Europe absorbed the output of the Saharan gold to provide her new coins such as the florin and the ducat, but exported silver from northern and central Europe to Italy before passing it on to the Islamic world on its ultimate journey to India, South-East Asia and China, the sources of the spices, silk and porcelain that Venice dispersed to the west. The drain of bullion to the east, lamented by the ancient Roman writers, seemed to have continued unabated fifteen hundred years later.

The Levant Trade 1300-1500

The history of the Crusades offers an interesting case study of the clash of economic interests and religious sentiment. The shock troops of the Christians were generally younger sons of the Norman and Germanic nobility, keen to carve out territorial principalities in the East as a reward for recovering the holy places of Christendom. The Italian cities went along, profiting immensely from providing transportation and financial services, as well as crucial naval support on some critical occasions. Their reward was trading privileges in the ports of Syria and Palestine. The Venetians pulled off the greatest coup of all when they diverted the Fourth Crusade to the capture of Constantinople from the Byzantines in 1204, winning access to the Black Sea and valuable possessions such as Crete. Their Genoese rivals made their comeback in 1261, when the Byzantines recovered Constantinople with their support. They now were the favored commercial power in the Bosphorus and the Black Sea, with their outposts at Pera, Caffa and Tana.

The Crusaders themselves, however, had suffered continuing reverses at the hands of the great Kurdish hero Saladin and his descendants, the Ayyubid sultans of Egypt. The flower of their armies were the Mamluk slave contingents, most of whom were Kipchak Turks and Circassians from the regions around the Black Sea. They took power from the Ayyubids and gained enormous prestige when they defeated the Mongols at Ain Jalut in 1260 and recaptured Antioch from the Crusaders in 1268. As a non-hereditary military caste with a strong preference for their Kipchak and Circassian kin, the Mamluks were vitally concerned with securing continuing supplies of captive youths from their homelands around the Black Sea. The Mongol rulers of Persia and Iraq, however, cut off the overland supply routes, leaving the sea as the only

alternative. This gave the Genoese, well established at Caffa and Tana, an excellent opportunity. They provided fresh supplies of slave manpower for the Mamluk armies, in return for access to the spices of the Indian Ocean supplied through the Red Sea. Thus, ironically, it was a Christian power that supplied the mortal enemies of the Crusaders with their indispensable military recruits, throwing in timber, iron and other "strategic" materials as well as weapons for good measure. With these replenishments, the Mamluks energetically prosecuted their war against the last remaining Crusader strongholds, taking Tripoli in 1289 and Acre in 1291. Acre had been the major port for the Levant trade up to the time of its fall. Cotton, produced extensively in Syria and Palestine, had been one of its chief exports to the industries of Italy and southern Europe.

The popes issued repeated prohibitions against trade with the infidel, particularly in war materials. Not surprisingly these were mostly ignored, despite dire threats of excommunication for the offenders. The church's moral position was compromised by the sale of exemptions, for a sizable fraction of the profits. With direct traffic between Italian ports and Muslim ones under papal interdiction, much trade was directed to Lajazzo, in Cilician Armenia, and to ports in Crete and Cyprus. Woollen cloth from Flanders and Italy was one of the main European exports, competing with the textile industries of the Near East. Silk and glass, formerly exported to Europe, were now being imported, pointing towards the future industrial decline of the Near East. So keen were the Mamluks to keep trade going that they apparently were willing to compensate European merchants for the cost of purchasing the papal exemptions from the ban on trade with themselves.

The Mongol rulers of Persia and Iraq at this time were Buddhists, but sympathetic to Christianity and hostile to Islam. This made them extremely popular with the popes, who sent frequent diplomatic and religious missions to their capital at Tabriz. This city also became a

thriving commercial center. Spices and other eastern products were sent overland from Hormuz, and then to the sea at either Trebizond on the Black Sea or Lajazzo. Caravans to China and India also went through Tabriz. The Mongol princess that Marco Polo escorted on his way home from China also landed at Hormuz, on her way to the court at Tabriz.

This major alternative source of oriental products withered away when Mongol rule over Persia and Iraq disintegrated in the middle of the fourteenth century, followed in 1368 by the expulsion of the Mongols from China by the Ming. The overland routes to China and India now being effectively closed, it became more important than ever before for the Italians and other European merchants to secure the trade of Egypt and Syria. Papal restrictions became less and less relevant and the volume of traffic steadily increased during the fifteenth century.

As Eliyahu Ashtor (1983) has emphasized, the pattern of these exchanges between Europe and the Mamluk domains increasingly began to reflect an industrial decline on the part of the latter. The relationship of the trading partners characteristic of the "Golden Age of Islam" was steadily being reversed. What were the causes of such a momentous transformation? Ashtor himself first mentions the rise in real wages in Egypt and Syria resulting from the Black Death. This, however, can hardly be the cause since, as we have seen, real wages rose sharply in Europe too, for the same reason. The estimates of mortality from the plague in the Near East, of about one-third, are similar to those for Europe.

Ashtor is on stronger ground when he looks at technological progress in a number of specific industries. In textiles he points to the automatic spindle, the treadle loom and the water-driven fulling mill, all of which were introduced in Europe in the 13th century but not adopted in the Islamic lands. The Europeans penetrated the textile market at both ends. For the upper classes expensive Florentine and Flemish woollen cloth, and for the poorer people the cheaper

fustians and serges from Catalonia and England. Alkali ash, a cheap and abundant raw material from Syria, was bought in great quantities by the Italians as an essential input in the manufacture of glass and soap. A sequence of innovations made the Murano glass of Venice supreme in this sphere, in which Syria had once led the world. Another major item in which the direction of trade was reversed was paper. In Egypt and Syria technology remained essentially the same as it had been learnt from the Chinese prisoners captured at the Battle of the Talas River in 751. Europe introduced mechanized processes and better raw materials to produce a superior product.

Another serious factor inhibiting industry in Egypt and Syria was the arbitrary and erratic fiscal exactions of the sultans. Privately owned factories were driven out of business and royal factories declined because of corruption and mismanagement. Ashtor (p. 204) reports that Alexandria, a major center of the textile industry, had 14,000 looms in 1390 but only 800 in 1434, and (p. 206) that Cairo had 66 sugar factories in 1325 but only 28 in 1400.

In return, the Near East was only able to offer the traditional Eastern spices, now rising in price, and raw materials such as cotton. Furthermore, she became increasingly dependent on the Italians for shipping services, even for trade with North Africa and from Egyptian to Syrian ports.

The picture that all this leaves us with is of two regions being hit simultaneously with the same catastrophic demographic shock, to which one adapted with institutional and technological innovation while the other remained largely passive.

One principle that the rulers of Egypt never forgot, from Saladin to the last Mamluks at the beginning of the sixteenth century, was the necessity to separate the merchants of the East and the West, with themselves as the sole intermediary. Thus merchants from the Indian Ocean were encouraged as much as possible to bring their goods through the Red Sea and sell them at

Cairo. European merchants, such as the Venetians, the Genoese and the Catalans, were generally encouraged to establish trading posts at Alexandria. Thus the two extremes were never allowed to meet, having to sell to authorized Egyptian merchants at Cairo and buy from them at Alexandria. For centuries the extensive profits of being in this enviable position of the sole "middleman" accrued to a class of wealthy merchants known collectively as the Karimi. They were not an ethnic group but more like a loose guild. Many of them became fabulously wealthy on the basis of the monopoly position they enjoyed and also on the extensive trading links they had with the East, ranging as far as China. Needless to say, they were expected to make substantial contributions to the treasury of the Mamluk sultans, on whose continued favor they were totally dependent. The exactions tended to become greater the more the land revenue declined as a consequence of the depopulation caused by the Black Death. In the 1430's the sultan Barsbay attempted to replace the Karimis with a state monopoly. Although his attempt was ultimately unsuccessful, the Karimis were basically ruined in the process, and never subsequently regained their earlier privileged position.

An early attempt to break the Egyptian monopoly of the Red Sea trade was by the French Crusader Reynaud de Chatillon in 1182. Capturing positions on the Gulf of Aqaba he launched a galley fleet that raided pilgrim and merchant vessels as well as capturing the port of Aydab on the western coast of the Red Sea. He also attempted to raid Mecca and to control Aden. Had he done so, of course, he would have succeeded in breaking the Egyptian monopoly. Saladin was aware of his intent and sent powerful forces to drive him away. When Reynaud was captured after the great defeat of the Crusaders at the Horns of Hattin in 1187 Saladin personally decapitated him.

Thus the Egyptian economy and treasury, even before the days of the Suez Canal, prospered substantially for centuries on the profits of re-exporting the spices to the West, and also on the trade in western goods in the other direction. The balance of trade with the East, however, was always in deficit, and was settled by the steady flow of precious metals, mostly in the form of coins, to India, South east Asia and China.

The volume of the Mediterranean spice trade over the course of the fifteenth century has been estimated by Wake (1986). He puts pepper imports of Europe in 1400 at something in excess of 1000 tons a year, with Venice's share at about 60% of the total. For spices other than pepper he puts Europe's imports at upwards of 470 tons and possibly as much as 550 tons, with Venice's share at about 40% to 45%. By 1500 Wake estimates about 1200 tons a year of pepper imports into Europe, with Venice's share falling to below 60%. For spices other than pepper, i.e. the more valuable cloves and other items, Europe's imports rose to about 1200-1350 tons a year, and Venice's share rose to over 60% from the 40-45% that she had in 1400. In other words, Venice slightly reduced her share of the moderately growing pepper trade, but greatly increased her share of the more rapidly growing, and much more valuable, trade in spices other than pepper.

A World Economy 1500-1750

Though a "world economy," as we have seen, had been operating for centuries, and even millennia, the decade of the 1490's which saw the voyages of Columbus and da Gama was undoubtedly the decisive moment in the formation of the truly global world economy as we know it today. No one has stated the consequences of these momentous events more strikingly than Adam Smith:

"The discovery of America, and that of a passage to the East Indies by the Cape of Good Hope, are the two greatest and most important events recorded in the history of mankind" (Wealth of Nations, p. 141)

"...instead of being the manufacturers and carriers for but a very small part of the world, the commercial towns of Europe have now become the manufacturers for the numerous and thriving cultivators of America, and the carriers, and in some respects the manufacturers too, for almost all the distant nations of Asia, Africa and America. Two new worlds have been opened to their industry, each of them much greater and more extensive than the old one...." (Wealth of Nations, p. 142)

These "voyages of discovery" have recently come in for much criticism and even abuse, as the origin of the plundering and degradation of other continents by an arrogant and imperialistic Europe. While recognizing the base motives of greed and conquest at the roots of the enterprise they nonetheless constitute an irreversible landmark in the creation of a global trading system in which we are all involved. Moral criticism certainly has its place and while one can sincerely regret the catastrophic consequences for many of the "people without history" as Eric Wolf (1982) has eloquently called them, that should not prevent us from trying to understand how the modern world economy came into being.

Why was it that Portugal and Spain, or more specifically Castile, that took the lead in these ventures? What were the origins of the technology and the organizational experience required to carry them out? In attempting to answer these questions one must realize, as

Verlinden (1972) and Fernandez-Armesto (1987) have pointed out, that they were essentially an extension of the crusading and colonizing activities carried on by the Christian states of the Iberian peninsula against the Muslims, on the mainland as well as the islands of the Mediterranean, in the course of the "Reconquista." The sailing techniques drew on the experience of Northern seafarers as well as on the rich Mediterranean practice, and the methods of land disposition and exploitation using feudal grants and enserfment of the original population were worked out in the earlier conquests of the Muslim territories. The hazards of voyaging in the Atlantic were pioneered by the Genoese who were the first to explore the Canaries and other Atlantic islands off the African coast. In 1204 two Genoese brothers, the Vivaldis, sailed beyond Gibraltar in an attempt to circumvent Africa and were never heard of again. There was always a tradition among the Genoese, the "western" rivals of "eastern" Venice, of trying to beat their rivals in eastern waters directly, or if that failed of somehow trying to outflank them by an "end run" from the west. That is why it is so significant that Columbus, though sponsored by the crowns of Castile and Aragon, was himself a Genoese and was backed in his endeavors by the influential merchants and financiers of the Genoese community in Seville and the court at Valladolid. The attempts by the Genoese, Catalans and Portuguese to colonize the Canaries and Madeira, and the voyages down the African coast by the Portuguese to get to the sources of the gold of the Sudan, developed the knowledge of the Atlantic winds and currents upon which Columbus was able to draw on his own great voyages. Thus it was that the Atlantic was not conquered by the British, Dutch or French but by the Iberians on the basis of their Mediterranean experience and their contacts with the Genoese.

Though western "hegemony" over the world economy is commonly dated to the era of the discoveries, it is important to note that in themselves the voyages did not signal a decisive

technological supremacy over China or Islam. It is essential to distinguish between the capability and the incentive for these voyages. The fact that the Chinese, at least, had the capability is established by the by now well-known voyages of great fleets under the Muslim admiral Cheng Ho of the Ming dynasty in the first decades of the 15th century to S.E. Asia, Ceylon and East Africa. The Chinese junks in these flotillas were much larger and more seaworthy than the caravels of Columbus and da Gama almost a century later. The motives for the voyages, however, appeared to have been more political than economic, to "show the flag" in southern waters to demonstrate the power of the new native dynasty in China. Thus when court intrigues among the bureaucracy deemed concentration on the land frontiers to the north and west more important than the expensive overseas expeditions the voyages were discontinued. Without the persistence of the profit motive behind them, the Chinese thus lacked the incentive, even though they had the capability, to "discover" the west instead of waiting to be "discovered" themselves.

It is only in hindsight that the voyages mark the beginning of European hegemony. At the time they could have been written off as the inconsequential adventures of minor peripheral trading states, who could in no way challenge the formidable land-based power of the Ming in the Far East and the new Islamic empires of the Ottomans in Turkey, and in Syria and Egypt after 1516, the Safavids in Persia, and the Mughals in India. Even in S.E. Asia there were powerful states in Burma, Siam and Java. Nor did the West have a monopoly of firearms and gunpowder. The Ottoman sultans used huge cannons, built by Christian renegades, to batter down the walls of Constantinople in 1453. The Mamluks clung to their bows and arrows, disdaining the adoption of firearms, which made it easy for the Ottomans to conquer Syria and Egypt from them in 1516 and 1517. Cannons were also enthusiastically adopted by the Mughals

and most of the S.E. Asian states. The combination of "guns and sails" in the ocean-going sailing ship, however, was a decisive European innovation that the Eastern powers failed to match, to their detriment in the long run.

The Portuguese empire in the East was a string of fortresses and strong points at strategically located naval bases, stretching from the coasts of Africa to Hormuz on the Persian Gulf, the headquarters in Goa, and on to Malacca and Macao. From these positions they attempted to monopolize the East-West spice trade and much of the coastal carrying trade of Asia. They did not succeed fully, the main reason being that the Ottomans prevented them from capturing Aden and thus closing the Red Sea. Thus shipments of spices around the Cape to Lisbon and the main commercial center of Antwerp always had to compete with shipments by eastern merchants through the Red Sea and thus into the hands of the Venetians. Venice was therefore able to survive the apparently mortal blow of 1498 for over a century, on the basis of establishing a pragmatic accommodation with the Ottomans. They continued to be the "middleman" between Europe and the East, until the French, Dutch and English supplanted them in the early 17th century.

What Reid (1993) has called the "age of commerce" in S.E. Asian history is dated by him as beginning not with the Portuguese entry into the eastern seas but with the start of the Ming voyages in 1402, a century earlier. With trading links established again, the "China market" was what first led to the expansion of spice exports from the Moluccas and pepper exports from Java and Sumatra. After the Ming again turned inwards in the 1430's the ruler of the Ryukyu islands induced merchants from Fujian province in China to settle at his capital of Okinawa, which became a flourishing entrepot for trade between Japan, which exported silver, China which exported silk and porcelain, and S.E. Asia which exported spices and forest

products. Japan herself entered S.E. Asia actively in the period from about 1580 to 1635, after which the Tokugawa sealed off the country from outside contacts. The Ming emperors also had to yield to pressure from the coastal provinces to permit an expansion of legal trade with S.E. Asia and also with the new Spanish outpost of Manila in the Philippines. Europe, however, was the fastest growing market and seems to have taken up to about half of the Moluccas output of cloves, nutmeg and mace in 1650.

Pepper exports expanded even more rapidly because the expanding market opened up new production in Sumatra. The powerful Muslim sea-faring state of Aceh in Sumatra carried pepper directly from Sumatra through the Maldivian islands to the Red Sea, bypassing the Portuguese strong points. The volumes of trade in Portuguese and Muslim hands seemed to have been about equal towards the end of the 16th century, thus enabling Venice to survive. Spice shipments to Europe from both sources were roughly double in volume in the second half of the 16th century as compared with the previous peak in the 1490's, according to Reid (p.21).

The 1590's saw the emergence of a new trading power that was to dominate the world economy for the next century, the newly independent United Provinces of the Dutch Republic. Having won their independence in a bitter struggle with the Spanish Hapsburgs, they benefited from the flight of entrepreneurs and skilled labor from Antwerp and other southern regions of Flanders that were still ruled by the Spanish. Antwerp lost its eminent position as the great entrepot of Northern Europe and its place was taken by Amsterdam. With a population of less than 2 million at its height, the Dutch owed their commercial prosperity to their location and to their long experience with shipping and trade in bulk goods between the Baltic and Western Europe. Unlike France and England, where mercantile interests clashed with landed interests, the Dutch federal state was a predominantly mercantile one. The miracle of organization and

institutional innovation was that they were able to operate as in effect an enduring multi-product cartel, containing the conflicts of interest between the constituent towns and regions in the interest of future profits. Control of half of the world's fleet of ocean-going vessels was a key element in their supremacy, as well as the willingness to use naval and military force in the systematic pursuit of profit, as emphasized by Israel (1989).

Dutch companies entered the East Indian trade in the 1590's, driving up prices of pepper and spices in S.E. Asia and producing gluts in the European market. In 1602 they formed the VOC or United East India Company, to replace the ruinous competition with a co-ordinated monopoly strategy. In 1605 they captured the legendary "Spice Islands" of the Moluccas from the Portuguese and established a monopoly of cloves, nutmeg and mace. The number of VOC ships returning from the East Indies rose in every decade of the 17th century except the second, from 59 in the first decade to 156 in the last, according to Steensgaard (1977).

The Dutch successes were not easily won. They had to compete not only with the Portuguese and Spanish but also with their Protestant allies the English. Thus they had to relax their monopoly of the spice trade of the Moluccas, giving the English a one-third share in exchange for a proportionate share of the military burden and infrastructure. Local Asian merchants, such as the Gujeratis of Western India, were also formidable rivals, as were the Muslim states of the Malay peninsula and the Indonesian archipelago. Trading acumen had to be supplemented by warfare and diplomacy in the vast interdependent system that the world economy had now become. Thus the Dutch used diplomacy to win favor with the reclusive Tokugawa Shogunate of Japan at the expense of the Portuguese. After 1638 the Dutch, confined on the island of Deshima off Nagasaki, were the sole contact between Japan and the West. They obtained much-needed silver from Japan in exchange for Chinese silks, which they purchased at

their trading center in Taiwan. This Japanese silver was used to acquire cloth in India for exchange with pepper and spice producers in S.E. Asia. From their headquarters at Batavia (the present Jakarta), the VOC operated a global system, arbitraging alertly between commodities and regions. To economize on the need for silver they built up an extensive carrying trade between the different ports of Asia, supplementary to their activities in pepper, spices, textiles, indigo and other goods for export to the West. The capture of Malacca from the Portuguese in 1641 added greatly to their domination of the Eastern seas, though they failed in repeated attempts to capture Manila from the Spanish. They captured Colombo in 1656, giving them the monopoly of the lucrative cinnamon trade of Ceylon, and also intervened extensively in southern India at the expense of the French and the English.

Eventually, however, the Dutch began to lose out. Pepper and spices, which was the mainstay of their trade in the middle of the century, fell to less than a quarter by 1700. It was now Indian cotton textiles that became the chief Asian export to Europe, supplemented by coffee and tea as well as silk. The Dutch competitive position in these areas was not as strong and the overhead expenses of maintaining their vast global trading system became an increasing burden. They also were worn down by the military power of the much more populous France and England, so that by 1740 their day eventually passed.

Even though the measurement of profit rates is a hazardous exercise there seems no doubt that the VOC was a highly profitable operation. The ratio of sales to "returns," the value of cargoes received, was always between 2 and 3 [see Attman (1981, p. 36)], with the totals of both figures doubling over the century from 1640 to 1730. How were the imports of the VOC paid for? Even though they did their best to make the Asian trade "pay for itself," the VOC had to export considerable volumes of precious metals from Europe to the East. These precious

metals were obtained by Dutch surpluses with Spain and Portugal in the Atlantic and intra-European trade. The export of precious metals was usually from half to two-thirds of the value of Asian products imported into Europe by the VOC. The silver exported from Europe went to Bengal and the Coromandel coast in India for cotton textiles, to Batavia for pepper and spices, and later in the 18th century to Canton for tea. These silver exports from Europe were supplemented, as we have seen, by silver exports from Japan in exchange for Chinese silk in the first half of the 17th century.

The English East India company was also formed, like the VOC, at the beginning of the 17th century, and its career to a large extent parallels that of its great rival. It was never able to wrest control of the islands of the Indonesian archipelago from the Dutch but it competed more successfully in India and Persia and later in China. Like the VOC its operations were originally dominated by pepper and spices but eventually cotton textiles from India and tea from China were the chief goods imported into England for re-export to Europe, Africa, the Americas and the Levant. These Indian cotton textile imports continued right up to the time around 1800 when the steam engine revolutionised the Lancashire cotton textiles industry, eventually dooming the weavers of Bengal. Like the VOC the EIC had also to purchase about two-thirds of its Asian imports with precious metals obtained from Spain. The silver was earned by export surpluses with the rest of the world in which the re-export of the Asian products played a very prominent role. Thus, when crude mercantilists attacked the EIC for "draining" England of precious metals by exporting them to China and India the more sophisticated among them, like Thomas Mun, pointed out that it was rational to export precious metal if more would be returned as a result.

The expansion of the world economy that took place in the 16th century and its increasing integration was fuelled to a large extent by the influx of precious metals, particularly

silver, from the New World. The thesis of Earl Hamilton (1934) regarding its consequences for the "Price Revolution" are still inspiring controversy and further research today. There is still no consensus on either facts or interpretation. At the moment I just have for some very brief observations. First is the question of the Quantity Theory of Money. While most modern economists would subscribe to its validity as a long-run proposition, we must be careful not to apply it to each country as if it were a closed economy. In a world where "money" largely meant gold and silver coins, exchange rates were either fixed or confined to the range of fluctuation of the gold-silver price ratio. Thus the appropriate theoretical framework is the "monetary approach to the balance of payments," the modern revival of the specie-flow mechanism of David Hume, pioneered by Robert Mundell and Harry Johnson in the 1960's. If the Quantity Theory formula $MV=PQ$ is to be used, it ought to be on a "global" and not a "national" basis. The new output of gold and silver accruing to Spain and Portugal and their colonies in the New World clearly had what we now call a "Dutch Disease" effect on those economies, driving up wages and the relative price of non-traded goods. Public consumption and employment, bureaucrats and armies, as well as priests and nuns multiplied, while agriculture and industry declined, unable to compete with imports from Holland, England and France. These deficits of the Iberian powers enabled the VOC and the EIC to finance their imports of Asian products, as we have just noted above. Ultimately, as stressed by Kindelberger (1989), the precious metals wound up in India and China, where they served a much needed role of monetization of the economies as well as a convenient form in which to hoard wealth. Fluctuations in the import of precious metals, and the resultant volatility of prices, were a significant factor in the economies of the Ottoman and Mughal empires, on which see Barkan (1975) and Moosvi (1987). It has been argued by Atwell (1977) that difficulties connected with the supply of silver were partly

responsible for the fall of the Ming empire to the Manchus in 1644. On the positive side, however, we have the fact that the integrated modern world-economy was being born, with a booming trade in silk, porcelain and tea in China, pepper and spices in S.E. Asia, cotton textiles in India, silk in Persia, and sugar, tobacco and cotton in the New World. The stage was being set for the Industrial Revolution and its even more momentous consequences that are still reverberating today.

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