

# The Late Medieval European 'Integration Crisis' 1340-1540

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As has been suggested elsewhere<sup>1</sup> the English economy like that of Flanders, Frankia, Lotharingia, Tuscany and Piedmont-Lombardy, underwent during the years 1040-1340 fundamental economic changes which transformed the whole fabric of society and gave birth to a distinct medieval economy. Subsequently from 1340-1540 a similar process of economic change wrought a like transformation in the societies of Central- and South-eastern Europe.

## **Central- and South-eastern Europe to the thirteenth century**

In the late-tenth and eleventh century the Polish and Bohemian kingdoms had received only diminutive quantities of western silver as the major flows had passed through the more northerly Baltic lands. Acute deflationary situation had been perpetuated in their economies, which made commodities therein extremely cheap and resulted in the widespread use of 'coin-substitutes' which, according to Ibrahim-ibn-Yakoub, assumed the form of small pieces of cloth.<sup>2</sup> This enhancement in silver prices had sent men scurrying in a search of indigenous deposits of the precious metal, however, and during the second quarter of the twelfth century, this resulted in the discovery of new workings. In Poland an inventory of 1136 concerning the income and possessions of the Archbishop of Gniezno, attached to a bull of Pope Innocent II, reveals the ex-

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1. Blanchard 1996(a).

2. Westberg 1898. The travel account of Ibrahim was subsequently re-issued in a revised edition with a very complete list of literature on Ibrahim in *Kommentarij na zapisku Ibragima ibn-Jakuba o slavjanach* (1903). It has been extensively utilised by Polish and Czech historians: Stepkova 1955 and 1956; Kowalski, ed. 1946.

istence of just such a metallurgical establishment: '... Item a villa before Bitom which is called Zversov with *rustici*, silver miners and two taverns pertaining only to the archbishop's jurisdiction'.<sup>3</sup> In a Polish villa with its appending rustic population, at some time in the late-eleventh or early-twelfth century, there had been established a small mining enterprise with the necessary taverns for the provisioning of the workmen. In Bohemia there may also have been such small-scale silver mining operations at this time.<sup>4</sup> On the eastern marches of the Central European mining region, therefore, the late-eleventh and early-twelfth centuries witnessed the discovery of new argentiferous ore deposits which provided the basis for small mining enterprises which were certainly operational in the 1130s and 1140s. Nor were such activities confined to the periphery of the early medieval European monetary system where the bullion shortages had been most acute and the use of 'coin-substitutes' most common. At this time old mines were also re-opened and new deposits discovered in the core region of the early medieval industry. Perhaps during the years after 1125 there was small-scale silver production at Freisach in the Eastern Alps.<sup>5</sup> More certain is the existence of silver mining enterprises at this time in the Black Forest and Franconia.<sup>6</sup> In all cases, however, output was diminutive and even as the first great western silver boom ran its course, in the lands to the east of the Rhine-Rhone axis the years *ca.* 1125-1155 witnessed a continuing depletion of silver stocks. At prevailing high and rising silver prices, it was only within the immediate vicinity of new silver mines or other silver-gold supply sources (within Germany in Franconia, Swabia, Bavaria and the Rhineland) that any semblance of monetary order was maintained. Debasement here proceeded at a relatively slow rate. These islands of 'hard' currency existed, however, within a monetary system which, whilst maintaining its pre-existing structural form, experienced an acute phase of stock depletion. This resulted in the institution of a system of coinage renewal (in Scandinavia, Poland, Bohemia and Hungary). Alternatively, the striking of light-

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3. The document is published in Zakrzewski, ed. 1877, I, pp. 10-3 and in Maleczynski, ed. 1956-64, I, fasc. 1, no. 15, pp. 39-41 whilst there is an excellent critique of interpretations of the document in Molenda 1963, pp. 46-9.

4. Koran 1955, I, pp. 83-8; Schwarz 1958.

5. Wiessner 1951-53, II, p. 194; Suhle 1964, p. 142; Zycha 1907.

6. Gothein 1887, p. 387n; Köhl 1917.

weight coins (the *Dünnpfennig* along the Baltic littoral, in Saxony, Thuringia and parts of Franconia-Swabia) was undertaken. The impact of the first continental European silver production-cycle was thus slight, limiting the depletion of coin stocks in the immediate vicinity of new silver-supply sources but only at the cost of isolating these areas from trends at work in the region as a whole. Market fragmentation thus took place within a structure where the normative experience was one of stock depletion and the emergence of a system of 'soft' currencies.

Nor did this situation significantly change during the subsequent western mining booms of the years 1155-1225. In the eastern sector of the European silver industry, encompassing an arc of workings, which linked the Böhmerwald, Erzgebirge and Tatra Mountains, during the years *ca.* 1171-81, there was considerable enthusiasm for mining matters. On occasion, the aspirations to acquire great wealth from mining activity were realised in a series of major mining booms. At the eastern extremity of this arc near Bytom in Silesia, where a small mining and metallurgical enterprise had been operational during the 1130s, these years saw intense interest amongst ecclesiastical property owners with respect to the potential mineral wealth of the estates. From *ca.* 1178 this caused them to reserve rights over any gold, silver and other metals found on their lands.<sup>7</sup> Whether, during this production-cycle (*ca.* 1171-88) or subsequent ones (in *ca.* 1198-1225 and *ca.* 1210-75) these high hopes were ever translated into real mining activity, however, is doubtful.<sup>8</sup> In the Erzgebirge such matters were not in question. Here the Freiberg in Meissen workings reigned supreme. An analogous situation to that prevailing in Erzgebirge existed, moreover, at this time in the Böhmerwald. Here the diminutive and intermittent activity of the years *ca.* 1125-60 came to an end with the discovery of a rich vein of argentiferous lead ores on the lands of the Knights of St John at Mies in the western part of the Central Bohemian granite massive. The king, Vladislav II and his family, during the years *ca.* 1170-88 established regalian rights in the silver mine (*argentina de Mzea*). This allowed them to emulate, on a small scale, the lavish outlays of the Margrave Otto of Meissen.<sup>9</sup> Indeed, much of the

7. Wutke 1894, pp. 100-1.

8. Molenda 1963, pp. 52-3.

9. Koran 1955, I, p. 106; Sternberg 1836-38, I/2, pp. 68-9.



glory which Freiberg derived from the minting of the widely used Meissen pfennig at this time might be more properly allocated to Bohemian silver producers. Metal from workings there usually left the country in ingots and much, if not all, may have found its way to Saxon mints.<sup>10</sup>

Perhaps because of the integration of the great Freiberg and lesser Mies mines into the fabric of the European silver industry and resultant assimilation of the German lands into the European *communitas monetarum*, in the lands beyond the Elbe monetary systems continued to operate much as before. In Poland, Bohemia, Hungary and a number of German principalities, freed in the twelfth century from Imperial control, where there was a relatively strong central authority, an embryonic market structure operated on the basis of a relatively small coinage – perhaps as little as a million pfennigs in twelfth-century Poland. Monarchs here, like the kings of Bohemia, were accordingly forced to continue the practice of coin renewal, first instituted in 1118, until at least 1267.

During the years 960-1260, in terms of the supply of monetary metals, Poland and Bohemia had merely witnessed the replacement of one source of silver by another, as kufic pieces were gradually displaced by pieces fabricated from metals of European provenance. Neither source of supply, however, had been able to sustain, even when augmented with small local sources of precious metal, anything more than the most diminutive of coin stocks.

As in the days of Ibrahim-ibn-Yakoub, therefore, it was only in and about the regal centres of Kraków and Prague<sup>11</sup> that coins, which enjoyed a massive purchasing power, circulated freely creating a multilateral trading network which allowed the local inhabitants a degree of functional specialization. Peasants, in the immediate vicinity of these regal centres, cultivating the land on the basis of a new three course rotational system, were able to eschew a self-sufficient existence. They could exchange foodstuffs for manufactures at a restricted number of local markets, numbering perhaps a hundred or so in twelfth-century Poland.<sup>12</sup> Elsewhere, however, society remained as before centred on tribal fortresses or *goroda*, small earthworks, which served as places of refuge in times of inva-

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10. Jánacek 1972, p. 905.

11. Kavka 1962, pp. 546-9.

12. Tabaczynski 1966, p. 210.



sion and war. From such centres people ‘came out of the strongholds in which they were keeping themselves shut up for fear of the wars. And they returned, each one to his own village or holding’,<sup>13</sup> where they existed in an autarchic environment dominated by a regime of forest and *Feldgraswirtschaft*. Long-distance trade, accordingly, during these years also continued in much the same form as in the tenth and eleventh century. Twelfth-century German slave razzias amongst the eastern Slavs continued to provide a regular supply of captives to be transported, together with such wares as swords or fine linens, by way of Regensburg and the eastern Alpine passes to Italy. Here they were exchanged for the silks and spices of the Levant. This trade, however, now rarely if ever transcended the bounds of the ‘soft’ money zone encompassing Central- and South-eastern Europe and Eastern Italy.<sup>14</sup> Economic conditions during the tenth to thirteenth centuries were thus characterised in Central Europe by the persistence of a subsistence economy with a stable and low level of economic development.<sup>15</sup>

### **Central Europe (Poland, Bohemia and Hungary), 1280-1520: Precious metal production, market- urban systems and agricultural change**

From *ca.* 1250 the situation in central Europe began to fundamentally change. In the aftermath of the ‘Great Bullion Famine’ of the years from *ca.* 1208/14-50 the focus of European precious metal production shifted eastward, where a new long-cycle (*ca.* 1250-1392/1412) ran its course, creating an intricate mining complex in the territories of the Bohemian and Hungarian kings (Figure 1).

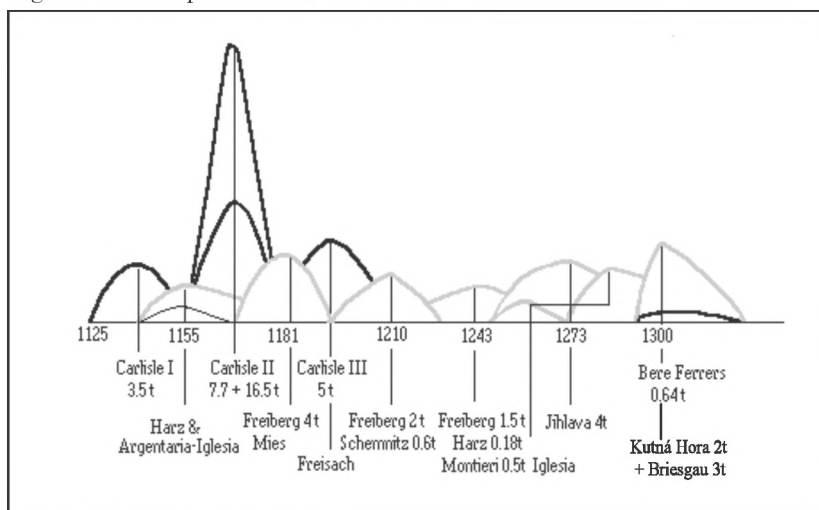
The initial focus of activity in its new location was at Jihlava (Iglau) on the borders of Bohemia and Moravia where in 1220/30 prospectors discovered new deposits of argentiferous lead. Between 1253-78 the mine supported a massive output. The king, Ottokar II

13. Quotation from Helmold the Priest’s *Chronicle of the Slavs*. Tschan, ed. 1935, p. 123.

14. Liebermann, ed. 1903-16, I, pp. 232ff; *Monumenta Germaniae historica. Scriptores*, XI, pp. 353f (*Translatio S Dionysii Areopagitae*) and XXX, 2, pp. 1451ff (*Die Honorantiae civitatis Papiae*); Warnke 1964; Ammann 1937, pp. 179-94.

15. Malowist 1966, pp. 17-23.

Figure 1. Silver production, 1125-1350



Source: Blanchard 2005, p. 925.

drew annually some 2,000 marks from the workings, equivalent to an output of some four tonnes of silver.<sup>16</sup> When from *ca.* 1280 output at Jihlava entered upon a phase of terminal decline, moreover, new stars began to rise in the firmament. Initially opened up in the second decade of the thirteenth century, the Schemnitz workings first came into their own in the reign of Béla IV (1235-70) and were shortly thereafter joined by other new silver mines at Golniczbánya (Gölnitz) in Zips (Spis) and Rodna in Transylvania. None of these Hungarian workings, however, contributed sufficiently significant quantities of silver to compensate for decline at Jihlava. It was only in 1298 with the discovery of rich silver-lead deposits at Kutná Hora (Küttenberg) in the lands of the Abbey of Sedletz that the boom continued. Initially, from 1298-1306, the new mine contributed a prodigious quantity of some 6.5 tonnes of silver a year. Output, however, soon declined to about 1.5 tonnes in 1311-18, thereby reducing the average output for the overall period 1298-1350 to two tonnes a year. Nor was this the end of the decline at Küttenberg. During the years 1350-1420 output continued, but at

16. Homan 1922, p. 132.

half its previous level (one tonne per annum).<sup>17</sup> The years 1253-1306 thus witnessed the dominance of Central European silver.

From ca. 1306 to 1392/1412 the onus of maintaining the high levels of precious metal production passed to the gold mines of Upper Hungary and Transylvania. One example will perhaps suffice to demonstrate the availability of precious metals in this second period. In 1344 the queen mother of Hungary, Elizabeth, visited Naples to help with the family problems of her son, Andrew. Her other son, Louis, king of Hungary, provided Elizabeth with the necessary allowance. It amounted to 27,000 marks of pure silver and 17,000 marks of pure gold. Louis later sent his mother another 4,000 marks of gold. The queen mother, accordingly, had at her disposal approximately 5,250 kg of gold and 6,750 kg of silver.<sup>18</sup> According to reliable estimates, the yearly gold production of Hungary during the years 1325-75 was about 4,000 kg, falling to 2,900 kg in 1375-1400.<sup>19</sup>

During the course of the second long-cycle (1250-1392/1412) of the European precious metal industry, therefore, output, though considerably lower than during the first long cycle (1125-1208/14), still produced significant quantities of the regal metals, predominantly in the mines of Bohemia and Hungary. As new supplies of silver and gold flooded into their economies, everywhere in East-central Europe, people were forced to respond to incipient inflationary pressures expressed through price or exchange mechanisms, in a situation where an enriched merchant group could provide investment funding at steadily falling interest rates. In as far as merchants were involved in the overseas trade sector of the local economies they were almost immediately heavily influenced by these changing monetary conditions linked to fortunes of the European silver industry. Coin issues were now regularised as new large groschen were minted, from 1300 in Bohemia and from 1328/9, with the new gold florin, in Hungary.<sup>20</sup> A failure to control supply, however, ensured that whilst local money markets were flooded with coin, the overpricing of domestic produce caused

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17. Koran 1955, I, pp. 89-90, 195.

18. According to Johannes de Thurocz' *Chronica Hungarorum*. Galantai and Kristu, eds. 1985, pp. 162-3.

19. Blanchard 1985.

20. Spufford 1988, pp. 233, 268-71.



most of silver and gold to pass into the hands of merchants who exported it, receiving Western European manufactures in exchange. A manuscript compiled in the last third of the thirteenth century provides an intimate picture of the nature of this trade, detailing the most important goods transported to Bruges via the East-West roads through Germany, and by the South-North trade routes through Poland. The references to Hungary, Bohemia and Poland contain special information about the wares traded in this period: *Dou royaume de Hongrie vient cire, or et argent en plate. Dou royaume de Behaingne vient cire, or et argent et estain. Dou royaume de Polane vient or et argent en plate, cire, vairs et gris et coivre.*<sup>21</sup> The trade was confined to either the products of the burgeoning mining industry of these lands – gold, silver, copper and tin – or to forest products – wax and furs – which, though highly priced, could still be sold in an increasingly deforested Western Europe.

The impact of the mining boom is thus revealed. Merchants, predominantly exporting specie from the region to exchange for western manufactures, grew rich and disbursing their funds created a new ‘urban’ complex in East-Central Europe. The most significant and most populated urban centre was still Prague. Charles IV turned this city into his royal residence and established some new districts there. He founded the university and made considerable efforts to promote the development of Prague. At the time of the death of the emperor, there were some 40,000 inhabitants. By comparison, in this period Cologne, the most populated German town amounted to 30,000, Lübeck, Danzig, Nürnberg and the other important ones to 20,000-23,000 inhabitants.<sup>22</sup> Beside Prague the most significant centres in East-central Europe were Breslau (Wrocław) (over 20,000), Cracow (Kraków) and Lemberg (Lwów) (below 20,000). In Hungary there were no large cities like these. At the end of the fifteenth century Buda had 8,000 and Pest, Kaschau and Szeged a somewhat smaller population.<sup>23</sup> The level of urbanization is determined, however, not only by the metropolises and residential cities but by the density of smaller urban centres as well. In Bohemia beside Prague, the dominant capital, numerous towns produced a prosperous urban network. There were at least

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21. *Hansisches Urkundenbuch*, III, p. 419 n.1.

22. Kellenbenz 1979, p. 64.

23. Fugedi 1969, p. 1396; Samsonowicz 1980, pp. 89-90.

thirty-two royal towns each with 2,000-5,000 inhabitants. The main towns had their own commercial ties outside Bohemia e.g. Prague, Pilsen and in Moravia, Brno. The proportion of the urban population was the largest in Bohemia as compared to Poland and Hungary.<sup>24</sup> The fourteenth century, however, also saw the beginning of urbanisation in Poland. The most significant progress occurred in Silesia and in Little Poland. Behind the principal centres Cracow, Breslau, Poznan and Sandomierz a lot of smaller towns also took part in the international trade. In Hungary the bulk of the urban population lived in approximately 800 small town-like privileged settlements, called *oppida*. The average number of inhabitants in these *oppida* were only few hundred people, and most of them lived on agricultural production.

Urban development therefore was largely confined to the foreign trade sector of Central-east European economies. Here merchants grew rich by the export of specie and the reciprocal import of western manufactures. Their links to the rest of the economy, however, remained restricted to trade with the centres of specie production, which provided the basis for their export trade. Mining was not an isolated activity of independent miners so it necessitated the establishment of a more complex organisation. Numerous people had to work together with special skills and long experience. The water supply and the drainage, the transportation of ore and metal also had to be provided. Among the medieval industries, mining was under the closest control of the authorities, that of the feudal lord, who owned the mine and, in the case of precious metals, the royal officials who controlled and recorded activity at the works. In East-Central Europe, because manufacturers in the face of foreign competition had eschewed taking up funding for the adoption of new processes, industrial production in general was poorly developed. It was certainly not intensive enough to be able to exert a real stimulating effect on the other spheres of economic life. Mining activity, however, was more advanced and developed to the required level. Urbanization in the mining regions was considerable, and a significant part of the population worked not in the self-supporting agriculture, but in this special and unique branch of industry, which produced its goods mainly for the international market.<sup>25</sup>

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24. Graus 1960, pp. 97-8; Fugedi 1985, p. 50.

25. Wee 1970, p. 106.

Beyond the crenalated walls of these cities and mining towns the impact of the mining boom was slight. In Northern Bohemia and Southern Poland the *rustici* continued to occupy woodland hamlets whose small enclosed fields were carved out of the surrounding forest. Elsewhere east of the Elbe the ring-fence form of settlement prevailed. Cottages were arranged in an approximate circle, so that the fenced garden plots formed a ring within which the cattle, which grazed the extensive pastures beyond, could be corralled. The rural population thus continued to operate in an environment dominated by a regime of forest and *Feldgraswirtschaft*.<sup>26</sup> They became more numerous and got richer during the years ca. 1250-1392/1412, by supplying their wares at enhanced prices to the merchants and mining entrepreneurs. Their methods of producing these wares, however, barely altered. Their riches were rooted in the inflationary pressures created by the mining boom. When that boom briefly collapsed in conditions of acute politico-economic crisis in the early fifteenth century their new-found wealth evaporated. This, however, was only a passing interlude and as gold and silver production was re-established in the lands of the Hungarian crown, as will be shown in the next section, the pre-existing pattern of economic development reasserted itself.

### **South-eastern Europe (Serbia and Bosnia), 1280-1520: Silver production, market-urban systems and agricultural change**

The long-term stability in gold prices, which had characterised European specie markets during the mid-fourteenth century (1325-75), rested upon the existence of a delicately balanced bi-metallic equilibrium within and between a series of autonomous specie markets. Each maintained the level and composition of its precious metal stock from independent, indigenous supply sources of silver and gold. The first of these, north of the Alps was described at the last section. It possessed plentiful supplies of gold emanating from Hungarian mines, which, when exchanged against silver, largely produced during the years 1290-1345 in Bohemia and from 1345-1410 at Freiberg-in-Meissen, created a sta-

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26. Laslovsky 1999, pp. 432-43.



ble monetary stock characterised by a relative abundance of gold. Further south, two similar autonomous markets existed on the basis of an efficient inter-continental trade network, facilitating the exchange of African gold for silver from Europe and Central Asia. Driving directly northward from the gold fields of the Niger Bend across the deserts of the central Sahara, caravans carried gold each year to the refining and minting centres of Morocco, providing the basis for an abundant circulation of 'heavy' single and double dinars in the Western Mahgreb. Further east caravans travelling via Ghardames, conjoining with those taking the East African routes, brought forth similar supplies to Egypt for minting into those miscellaneous gold pieces which found currency in the lands of the Circassian Sultanate, the Muslim East, the Hidjaz and the Yeman. Two distinct zones had thus emerged, each with cheap and plentiful supplies of gold, which were juxta-positioned against equivalent areas of abundant silver, thereby encouraging an active interchange of the two metals. In the west the profitability of this exchange was such that for half a century trade in goods was subordinated to trade in specie. From 1325-75, gold doblas regularly passed north bringing forth a countervailing supply of European silver southward. In response to these flows a distinctive market structure evolved in the Western-Tyrrhenian basin of the Mediterranean characterised by a long-term stability in gold prices and an 'anti-cyclonic' distribution of the two metals between the two continental littorals. Though relatively scarcer as one moved northward, gold was abundant to customers within a unitary market in which the African product reigned supreme. Nor was the situation significantly different in the eastern zone where gold, after minting, was distributed in a similar market structure in exchange for small quantities of European silver and large amounts from the mines of the Isaurian Taurus (Gümüş Saray, Lu'lu'a and Barbur). Within the area spanned by European commercial networks there were thus three distinct and autonomous specie markets. Each had its own sources of gold and silver and a similarly balanced stock of precious metals conforming to a common bi-metallic standard. Each thereby retained its autonomous character yet was united into a homogeneous and unitary system (Table 1).

From about 1375, however, the first signs began to appear of the disintegration of this monolithic edifice. Gold prices began to rise on European markets but *not* universally. Some regions re-

Table 1. European gold production, 1325-1455 (metric tonnes p.a.)

Date	Placer gold (Transylvania & Slovakia)	'Cementation' (Slovakia, Serbia & Hungary)	Mercury amalgamation (Rhineland)	Total
1325-1384	3-4	....	...	5-6.5*
1385-1424	0.25	2.65	...	2.90
1425-1434	0.25	3.60	...	3.85
1435-1455	0.25	4.06	2	6.31

Source: Blanchard 2005, p. 1030.

Note\* Augmented until the end of the fourteenth century by African gold imports of 2-2.5 tonnes per annum.

mained able to acquire adequate supplies whilst others suffered acute shortages as the once universal market split into atomistic elements.

The primary cause of these changes, as far as the European market was concerned, was rooted in the vicissitudes of indigenous gold production. Until the introduction of Afro-Asiatic techniques of separating gold from auriferous quartz by mercury amalgamation in the 1440s, this was largely confined to small scale placer workings of European gold bearing gravels.

Such placer workings during the balmy days of overpopulation and low wages in the early fourteenth century were thronged with workmen who sustained an annual output of four tonnes of the yellow metal. From about the 1380s, however, a combination of labour shortages and resource depletion caused production to fall, causing producers to cast about for new sources of gold. In the event, they lighted upon the exploitation of copper and lead ores containing auriferous silver.

The former ores were found in the lands of the Hungarian crown to the north of Neusohl (Banská Bystrica) but, because of their low metallic content, their exploitation was dependent upon the use of a new technology – the *Saigerprozess* – and a favourable conjuncture of primary metal (copper and silver) prices. In the first half of the 1390s these deposits of argentiferous copper and the Polish lead fields attracted the attention of two Nürnberg corporations – the Kammerer-Seiler and Flextorfer-Zenner – and the Genoese house of Gallici and until the close of the 1390s the pickings were

rich.<sup>27</sup> Falling silver and copper prices, between 1397 and 1412, however, posed difficulties from which the first German house emerged victorious thanks to their collaboration with the Venetian and Florentine agents of the Medici. From 1412, therefore, secure in the purchase of Polish lead and with control of Hungarian raw copper supplies the Italians and Nürnbergers now profited from the boom years 1412-8, annual output running at *ca.* 900-1,000 zentners of copper yielding some 1.5 tonnes of silver and 0.14 tonnes gold. The position was a highly precarious one, however, and when the favourable conjuncture of prices came to an end in 1418 in spite of a rise in gold prices the collapse in the price of the other metals ensured that production at Neusohl would decline. The cameral works, with its roasting and separation plant for the extraction of gold was closed down after mid-century. A new technology, however, had been created. With its diffusion within Hungary and to Venice and Nürnberg, the third and final long-cycle (*ca.* 1425-1525) of the medieval precious metals industry ran its course, at a still lower level than before. Following a short-term crisis in the 1450s, moreover, the first long-cycle of the Early Modern age evolved (*ca.* 1460-1560), which carried output to levels not seen since the twelfth century.<sup>28</sup>

*Hungary.* Even as Neusohl relentlessly passed along the path of decline, other production centres – at Kremnitz (Kremnice or Körmöcbányá) and Schemnitz (Banská Stiavnica or Selmecebányá) – came to the fore. Rising gold prices after 1418 encouraged an intensification of activity within the cameral district. Therein the roasting and separation works delivered for minting, even during the temporary depression in gold prices from 1432-5, some 1,600 marks (392 kg) of gold and 2,688 marks of silver a year. The cementation works at Kremnitz added a further 790 marks of silver. Far more spectacular were the results of the application of the same technology to the ores from the deposits of Neustadt (Nagybányá) located near the river Zarza where it flowed from the Avar-Gutin mountains. At their height in 1453/4, when the Stadtherr Johannes de Hunyard described them, the mine produced some 14,300 marks (3,508 kg) of gold a year, establishing ‘Hungarian’ (i.e. Slo-

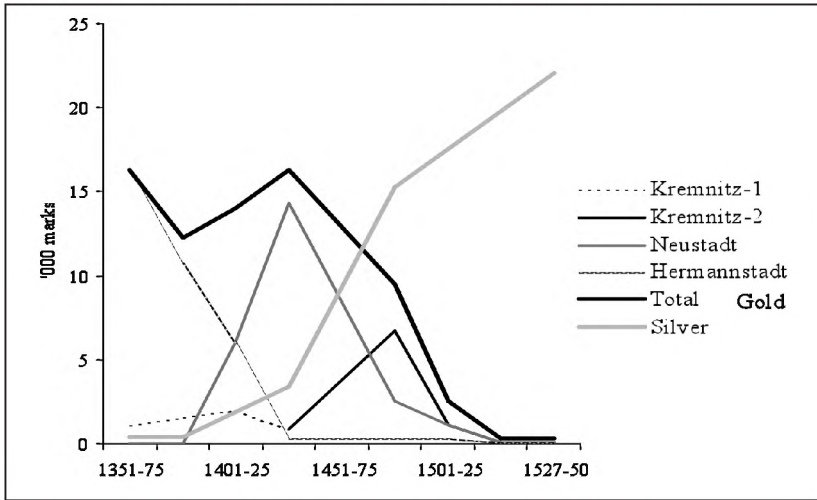
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27. Stromer 1968, 1970 and 1971.

28. Blanchard 1985.



Figure 2. Hungarian gold and silver production, 1350-1550



Source: Blanchard 2005, p. 1024.

vak, Hungarian and Transylvanian), supremacy in the European industry. Subsequently 'Rheingold', produced by the new mercury amalgamation techniques introduced from Africa, displaced the 'Hungarian' product but during two successive production cycles (1475-1525/6 and 1541/6-1573/4) the mines of Upper Hungary produced increasing quantities of silver, allowing the local production boom to continue. In spite of short-term crises in 1375-1400 and 1450-75 Hungary and, through its supply of argentiferous lead, Poland continued to play a significant role, as the third and final long-cycle (ca. 1425-1525) of the medieval precious metals industry ran its course (Figure 2).<sup>29</sup>

In these circumstances, the economic developmental patterns, described in the last section, continued to be played out. During the course of the third and last long-cycle (1425-1525/6) of the medieval European precious metal industry output, though considerably lower than during the second long-cycle (1250-1392/1412), still produced significant quantities of the regal metals, predominantly in the mines of Poland and Hungary. As the new supplies of silver and gold flooded into their economies, everywhere in East-

29. Paulinyi 1981.

Central Europe, people were again forced to respond to incipient inflationary pressures expressed through price or exchange mechanisms. They also now, however, for the first time were able to take advantage of a situation where the enriched merchant group provided a growing volume of investment funding at steadily falling interest rates. In as far as merchants were involved in the overseas trade sector of the local economies they were almost immediately heavily influenced by these changing monetary and financial conditions. Their trade though still dominated by the products of the burgeoning mining industry of these lands – gold, silver, copper and tin – now widened, as the merchants put out an increasing proportion of their wealth on local money markets forcing down base interest rates. As investment funding became progressively cheaper the merchants advanced money to the local seigneurie and indirectly to the *rustici*. Investing in viticultural production and vast herds or *chereda* of cattle, the latter thus now provided not only a new import substitute – wine – but also during successive booms (in 1425-50, 1475-1525/6 and 1541/6-1573/4) a new export product – cattle.<sup>30</sup> The old export trade in forest products – wax and furs – was thus now augmented by a new and rapidly expanding commerce in wine and livestock.

With abundant money available at low interest rates urban elites were now able to embellish their towns with new monumental edifices. The *rustici*, lord and peasant alike, although still continuing to operate in an environment dominated by a regime of forest and *Feldgraswirtschaft*, began to adopt more capital intensive methods paving the way for continuing growth.<sup>31</sup> This proceeded at first (1425-50) slowly and then (1460-1526), with the integration of the region into the South German sphere of economic influence, rapidly.

*Venice and the Balkans.* Nor was the situation significantly different at Venice, which had also adopted the new technology in the 1420s. Initially this was applied to the auriferous silver – the *argenta indorata* – found in the lead ores of Novo Brodo in Serbia. Here the much higher gold content of the silver, amounting to as much as a sixth, made it the primary, at prevailing relative prices,

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30. Blanchard 1986, pp. 427-60.

31. Laslovsky 1999, pp. 432-43.

object of exploitation. Born during the earlier crisis of 1280-1321 the workings had been neglected until 1418-32, when production rose to 6.1 tonnes of silver and 108 kg of gold a year. However, with the fall in gold prices after 1432 production declined to *ca.* 60 kg in 1452. Rising silver prices, 1432-52, as in Hungary, however, led to resumption of output in a host of mining centres – Brskovo, Kopaonik, Srebrnica, Rudnik and the Drina basin – which operated on the basis of the cupellation of argentiferous lead. Thus was created, in Bosnia and Serbia, the principal silver production base of the third and last long-cycle (1425-50 and 1475-1525/6) of the medieval European precious metal industry.<sup>32</sup>

Here, as earlier in Hungary, the new supplies of silver and gold transformed the local economy. A failure to control monetary supply ensured that whilst local money markets were flooded with coin, the overpricing of domestic produce caused most of silver and gold to pass into the hands of the merchants of Ragusa<sup>33</sup> (Dubrovnik) who exported it to Venice, receiving Western European manufactures in exchange.

### **International monetary and commercial systems**

As indicated in the last section, during the years 1325-75 European specie markets were characterised by a long-term stability in gold prices which rested upon the existence of a delicately balanced bi-metallic equilibrium within and between a series of autonomous specie markets.<sup>34</sup>

As from *ca.* 1250 the European mining industry again commenced upon a new long-cycle, however, Western Europe, and England in particular, were consigned to the periphery of the prevailing monetary system. English kings, however, were once more able to establish a 'hard monetary' policy. This permitted their subjects to conduct a growing volume of business at constant prices and make investment decisions free from the distractions caused by monetary disorder, but this now took place in somewhat different circumstances from before. Even at the height of the new

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32. Kovacevic 1960, pp. 248-58; Cirkovic 1981.

33. Krekic 1961; Bozic 1952; Spremic 1971.

34. Blanchard 1985.



long-cycle, mining output was never able to achieve the production levels of the twelfth century. The English population was accordingly forced to reduce its coin usage, utilising during the years 1250-92 only some 12-15 pennies per head, or about 40 per cent of the late twelfth-century level.<sup>35</sup> They were still, however, able to conduct their business at constant prices. A new monetary order had evolved during the crisis years 1196/1208-1250, in which coin had become a largely urban phenomenon. It entered rural society for the acquisition of cash crops and returned almost immediately in payments for rents or consumer good purchases. During the late thirteenth century the village probably only experienced the use of coin for perhaps a week or two each year. For most of the year transactions were carried out, not on a barter basis or in terms of 'coin substitutes', but in terms of records maintained in the villagers' collective memory. This was reinforced, moreover, by the use of the manorial court in its capacity as a court of record, only outstanding balances being settled in cash at the summer or Michaelmas fairs.<sup>36</sup> For the villager of the late thirteenth century the normal experience of money was not of coin but rather money of account. Even within an urban setting or in relations between town and country the use of coin in exchange transactions was limited. Most such transactions were carried out in the form of book entries in accounts, which had the same force of law as contracts entered on manorial court rolls. In town or country most actions took place within groups, characterised by a high level of personal knowledge, on the basis of recorded acts. Only at the interface between groups were coins used. A new monetary system had been created, which, freed from its dependence on supplies of monetary metal from a declining mining industry, was subsequently to prove totally capable of meeting the requirements of users within the extended market system already created.

Even as economic development, stimulated by the contemporary mining boom of the years 1250-1392/1412, caused per capita incomes in Poland, Hungary and particularly Bohemia to equilibrate upwards to the levels prevailing in Western Europe, the latter region was thus able to avoid those deflationary pressures, engendered by falling coin stocks, which threatened to under-

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35. Blanchard 2001 (b), pp. 786-8; Blanchard 2005, pp. 1089-1108.

36. Clark 1981, pp. 247-79.

mine its prosperity. In England, as elsewhere in Western Europe, the populations, utilising the new 'monetary' systems, were able to maintain the high levels of transactions demand generated by their enhanced levels of economic activity. In as far as the English monetary system required coin the silver was now obtained from Central European sources. Imports of that metal for the London mint, moreover, generated a countervailing export-flow of commodities through that port. The capital's merchants involved in this exchange, by engrossing an increasing proportion of the nation's trade, were thus able to enrich themselves. Through their disbursements, moreover, they could influence the process of agricultural change, superimposing during the years 1255-1335 yet another regional trading pattern on those already established.<sup>37</sup> In conditions of stable prices, the process of economic growth, which had characterised the years 1040-1140 and 1155-1208/14, thus now, between 1255-1335, came to final fruition.

Those embedded in the foreign trade sector of the western economies, accordingly, prospered. They were able to obtain cheap wares from a 'reformed' manufacturing-agrarian sector. They could also sell these wares at steadily falling prices, because of a reduction in transactions costs, which arose from the new stability prevailing in contemporary monetary systems. Able to fund their commodity purchases in the knowledge that, when they came to repay the sums due, there would be no monetary on-cost, they could conduct their business solely on the basis of known interest rates and, as will be shown in the next section, these were falling. Long-distance trade accordingly increased rapidly, allowing functional regional specialization in an international economy, which now encompassed both Western and Central Europe.

In about 1375, however, the first signs began to appear of the disintegration of this monolithic edifice. Gold prices began to rise on European markets but not universally. Some regions remained able to acquire adequate supplies whilst others suffered acute shortages as the once unitary market split into atomistic elements. The primary cause of these changes, as we have seen, was rooted in the vicissitudes of indigenous European gold production which, until the introduction of Afro-Asiatic techniques of sepa-

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37. Campbell, Galloway, Keene and Murphy 1993; Campbell 2000 and Blanchard 1996(a).

rating gold from auriferous quartz by mercury amalgamation in the 1440s, underwent a severe output crisis. At least as important, however, were changes in the African gold trade. In denuding the Egyptian market of supplies, these changes created a burgeoning export trade from Europe to that country. This increased from about a third of a tonne net annually during the last quarter of the fourteenth century to 1.89 tonnes from 1400-25 and perhaps as much as 4.5 tonnes annually from 1425-32. In order to maintain price stability and avoid incipient deflationary pressures, mint masters accordingly were forced to augment mint prices and strike more coins from a given amount of specie, as well as imposing restrictions on trade in precious metals. Nor, as Professor Day has shown was this entirely in vain.<sup>38</sup> Thanks to the application of these methods the amount of coin in circulation diminished less than the stock of specie. Yet as each nation struggled to retain and attract as much specie as possible they created conditions of marked instability between international money markets which forced merchants to compete with bullion dealers to acquire the money they required to conduct their commerce. In the absence of other sources of funding accordingly, dealings became encumbered by the existence of bi-metallic premiums on the exchange, which, in enhancing the merchants' transactions costs, caused their trade to decline.

Only when from 1425/32-1452 separation from Egyptian markets was achieved and indigenous gold production again increased, as the introduction of mercury amalgamation techniques led to a new production boom in the Rhineland, was normality again restored but not for long.

The Turkish invasion of the Balkans, during the years 1455-63, by causing a suspension of specie exports from the principal foci of the third, and last long-cycle of the medieval European precious metal industry, caused acute silver shortages. Crisis conditions, analogous to those of the years 1392-1412, thus once more prevailed, causing merchants to once more reduce the volume of their commodity trades.

Then again, when the Turkish embargo on specie exports was lifted and European silver production, as a result of the diffusion of the *Saigerprozess* from Nürnberg, entered on the first long-cycle

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38. Day 1978, pp. 3-53.



of the early modern age (*ca.* 1460-1526), normality was once more restored.

Having established during the years 1250-1375 the monetary pre-conditions for an efficient international exchange network, long-distance merchants, utilising its facilities, had been able to reduce transactions costs, and expand their business, allowing functional regional specialization in the international economy. Nor during subsequent years, from 1425/32-1455 and 1465-1526/7, when similar conditions had prevailed had international commerce been other than buoyant. When those conditions had been disturbed, however, by successive monetary crises, which attained their nadir during the years 1392-1412 and 1455-63, those who were engaged in international trades experienced a marked reversal of their fortunes. With the emergence of bi-metallic premiums on the exchanges, transactions costs increased and trade in goods was displaced by a trade in specie. Nor were the merchants' domestic counterparts unaffected by these changes. In Central Europe, where the populations were still largely dependent upon the use of coins to undertake their everyday transactions, dwindling supplies of such coin created an acute monetary crisis, deflationary pressures and reduced economic activity. In Western Europe the situation was somewhat different. In the short-term the crises caused acute shortages of coins, which again disrupted economic activity. By extending the number of transactions in which 'alternative' money supplies were utilised, however, the populations were able to avoid the worst effects of the crisis. Prices stabilized and populations continued to be able to make investment decisions free from the distractions caused by monetary disorder. The nature of these decisions was however highly conditioned by prevailing factor market situations, resulting from the onset in 1348 of a new plague pandemic – the Black Death.

### **Plague and changes in the 'real' economy**

*Western Europe.* Carried from Central Asia via the great emporium of Caffa to the ports of Southern France plague thereafter spread rapidly throughout Western Europe, successive epidemics cutting deep swathes through the local populations which were reduced in numbers by perhaps as much as a third. In Western Eu-

rope the years 1348/9-1392 accordingly saw the balance between population and resources totally transformed. The survivors of the epidemics found themselves in an environment of abundant resource availability and evolved a new demographic regime designed both to maintain this situation and provide themselves with the means to exploit the opportunities it provided. This strategy was forged amidst the turmoil of the monetary demographic crisis of 1396-1412 when the populace was unable to acquire through market institutions the capital needed to stock the abundant acres made available to them by the process of demographic decline. They accordingly evolved a process of self-accumulation. Women intent on self-improvement and needful, in a male-orientated legal system, of attracting a resourceful man for the realisation of their ambitions, spent extended periods of time as servants in husbandry. By working into their late 'twenties they were able to accumulate that large dower which allowed them to marry an enterprising individual who, with the money brought to the marriage and/or borrowed from elderly members of village society, could acquire and stock a substantial holding. By delaying marriage, moreover, levels of fertility were reduced to such an extent that the population stabilised at the much-diminished post-plague levels and the situation of abundant resource availability was perpetuated.

Operating within a newly created and hierarchically ordered system of social values, which afforded them a sense of individual identity and defined their place in an age of demographic-economic discontinuities, members of English peasant society experienced moreover a process of socio-economic advancement. Average per capita land holding increased. Erstwhile labourers were able, in the high-wage conditions of the fifteenth century, to accumulate sufficient funds to acquire at low rents the half- and full virgates (*ca.* 16 and 32 acres respectively) of land which would be their passports for entry into village society. The more enterprising amongst the ranks of that society engrossed multiples of such landed units. Thereby they created large holdings of *ca.* 120-200 acres, and assumed their place in a new peasant elite whose position in rural society was delineated by parliamentary (sumptuary) legislation and defined by its own self-created sense of *gentillesse*. Each and every active member of rural society was able to realise their labour potential in relation to larger landed resources than before, main-

taining land-based status differentials in a hierarchically ordered society within which average per capita landholding equilibrated upwards in size.<sup>39</sup> Polarisation, in as far as it existed, rested *not* on a differentiation in the size of the individual's land holding – an increasingly wide division between land-rich and land-poor – but on the capacity of the individual to work the land – a division between the young and able and old, childless and feeble. The two groups, moreover, existed in a mutually dependent relationship. The young possessed the labour to work the land but lacked the necessary capital for the realisation of their full potential. The old, very often in the fifteenth century widows who were unwilling to surrender their independence, possessed the accumulated wealth of their active years. Yet lacking children and too feeble to work themselves, they commanded insufficient manpower to effectively utilise this capital on their family holding. By leasing out their land (on a reversionary basis) and making loans from their accumulated wealth to the young and enterprising, however, the old were able to enjoy a large income, maintaining their high income/landholding-related status position in village society in the capacity of a rentier. By their actions, moreover, they provided the young with both venture capital and that necessary access to a 'successor status' which ensured their family's long-term place within the closed circle of the village land market.<sup>40</sup>

In these conditions intra-village capital markets were transformed, as population numbers declined, prices fell, per capita landholding-income increased and real savings levels were enhanced. Base interest rates, measured in terms of the price of land or rather in terms of a perpetual fixed rent charge secured on land, accordingly fell. During the course of the thirteenth century, Western European base rates had fluctuated about a high-level equilibrium of about 8-10 per cent per annum. Then from ca. 1300 they steadily declined until amidst the turmoil of the monetary crisis of 1396-1412 they finally settled at a new low level of between 4-5 per cent (Figure 3).<sup>41</sup>

As the fifteenth century opened, an enriched English populace was prepared to lend, on first class security, at previously unheard

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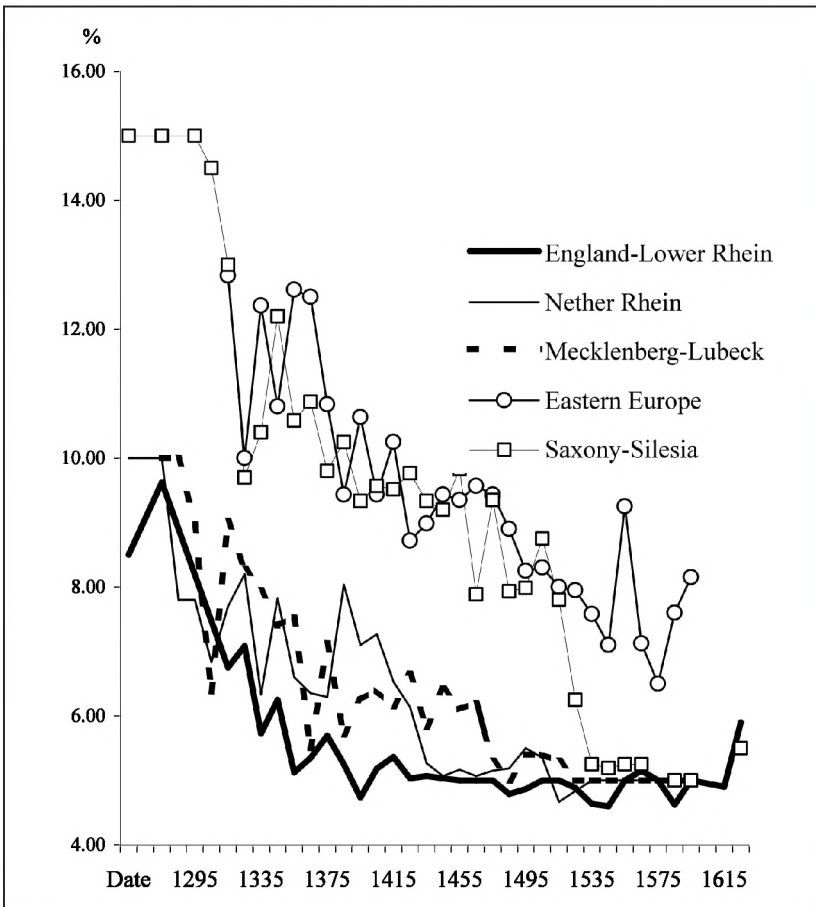
39. Blanchard 1980 and 1996(b).

40. Blanchard 1984, pp. 227-76.

41. Neumann 1865, pp. 266-73; Habakkuk 1952.



Figure 3. Base interest rates, 1250-1620



Source: Blanchard 2005, p. 1091.

of rates. During that century, moreover, internationally this market underwent a process of extension. From *ca.* 1460 both South Germany and Upper Rhenish capital markets became integrated with those of England and the Lower Rhine and before the century was out even the volatile markets of Basle and its territories were brought within a unitary Central European structure. Nor were the denizens of this market alone in enjoying the benefits of this cheap money in the fifteenth century for at this time in the North German lands, extending from Bremen to Lübeck-Mecklenburg,

interest rates also converged on those of Central Europe. Thus in Northern Germany and many lands west of the Erzgebirge, during the fifteenth century money became progressively cheaper. A steadily widening population of potential borrowers and lenders were drawn into a unitary market structure wherein by 1500, loans could be arranged, on the production of an iron-clad security, at a standard 4-5 per cent rate.<sup>42</sup>

Within this unitary market money was cheap and there was no shortage of takers willing to raise funding for their activities at prevailing rates. As rates tumbled money was taken up not only to provide stock for those members of the peasantry who engaged in the new mixed husbandry practices then spreading through the English countryside but it was also employed to fund the same peasants' new manufactories, established to process the flood of raw materials – wool, hides, corn and minerals – which now poured forth from their holdings. Able to secure new enlarged landholdings and with an abundant and cheap supply of capital, members of the English peasantry were now able to provide themselves and their families not only with a veritable cornucopia of foodstuffs but were also capable of fabricating for themselves and for sale, those raw materials which had previously passed to the towns.

Town dwellers, able to eschew involvement in those low productivity industrial activities which had become the preserve of the peasantry, could thus now concentrate on the high value-added finishing trades, distribution and the provision of financial and associated legal services. In the process they were assisted, moreover, by an unexpected ally, the English aristocracy, who by their investments in urban property markets allowed merchants and craftsmen to shift their asset holdings from low-yield real estate to investments in those new activities which provided them with a far higher return on their capital.

Not least amongst those members of urban society who availed themselves of this new situation were members of the international merchant trading community. As, particularly during the years 1392-1412 and 1455-63, international trade had declined they had experienced an enhancement in the cost of commercial credit and had responded, in England at least, by creating a new financial system to tap alternative sources of funds. Here during

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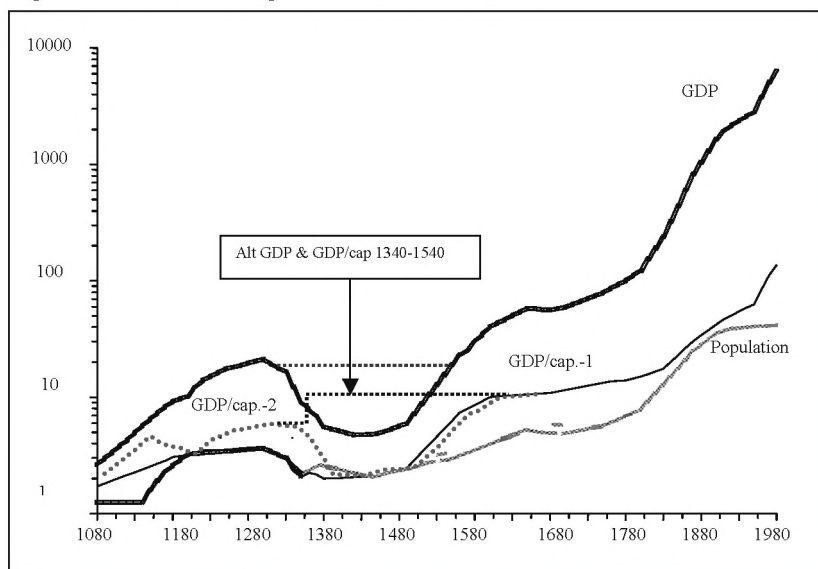
42. Blanchard 2001 (a).

these years alternative borrowers, such as English agriculturalists had possessed few ways of improving production and the returns on money invested in this sector were low. The interest they could offer on mortgages for agricultural improvement, accordingly, were also low (1½-3 per cent per annum) and few if any amongst an enriched population had been tempted to put out money on such instruments when they could make a totally safe return of 4-5 per cent. In such circumstances, merchants, able to offer returns above base rate, found few competitors bidding for money in the market place. Funds accordingly flowed from the agricultural to the non-agricultural sectors of the economy providing the basis for an elaborate sales credit system, which became the main source of English commercial credit. The international merchants' financial systems underwent a process of 'rustification', causing merchants and traders to make only marginal use of exchange facilities and integrating them instead into an intricate nation-wide commercial-financial system which provided them with access to the riches of English peasant society.

In the aftermath of the Black Death, in an environment of enhanced land:labour ratios, the English peasantry in particular had markedly raised their per capita product. Average per capita land holdings had increased in size and a mixed animal-arable system had evolved to allow them to fully exploit their extended resource base. Average *land* productivity under the new agrarian system was, however, lower than in a purely agricultural regime. By fabricating the raw materials produced on their holding, however, they were able to utilise the 'dead time' available in their agrarian round and gain the value-added component of the finished product. Thereby they markedly enhanced their per capita product and provided the family not only with an abundance of foodstuffs, raiment and household utensils and equipment for their 'self consumption' but also a sizeable cash income. Town dwellers were thus now able to eschew involvement in those low productivity industrial activities, which had become the preserve of the peasantry. Instead they could concentrate on the high value-added finishing trades, distribution and the provision of financial and associated legal services and in shifting from low productivity manufactory to high productivity service activities they also enhanced their per capita product. Across England average per capita product increased, so that in spite of the marked lowering of population levels, aggregate Gross



Figure 4. Estimated English GDP, 1086-1986



Source: Blanchard 1996(a), Appendix.

Domestic Product (GDP) was maintained throughout the years 1340-1540 at the preceding high levels which had come to characterise the distinctive medieval economy (Figure 4).

*Central-eastern Europe.* Such was also the case in Central-, South-eastern Europe where, as has been suggested, the years 1250-1392/1412, 1425/32-1455 and 1465-1526 saw per capita incomes in first Poland, Hungary, Bohemia and then South-eastern Europe equilibrate upwards towards the levels prevailing during the years 1250-1392/1412 in Western Europe. This, however, took place in very different circumstances from those prevailing in the West. In the demographic history of the East-central European countries the fourteenth and fifteenth centuries were not a period of a drastic population decline and thereafter a slow recovery, but rather a steady increase.<sup>43</sup> This progress lasted at least until the second half of the sixteenth century (Table 2).

43. Fugedi 1969, pp. 1299-1312 and 1985, pp. 47-58; Graus 1963, pp. 720-4; Gieysztorowa 1968, pp. 5-17; Russell 1965, pp. 95-6.

Table 2. Trends of demographic change (in per cent, the population of 1300 = 100)

Year	Germany (North)	England	Poland	Hungary
1300	100	100	100	100
1400	80	70	150	?
1500	123	66	250	175-200

Source: Samsonowicz 1975, p. 659.

As per capita income equilibration was achieved, accordingly, this took place in conditions of resource-manpower stabilisation which allowed the new economic regime to continue in operation in much the same form as it had first assumed during the years ca. 1250-1392/1412. At that time per capita income had increased and real savings levels were enhanced. Base interest rates, measured in terms of the price of land or rather in terms of a perpetual fixed rent charge secured on land, accordingly fell from the 'dark age' levels of *ca.* 15 per cent per annum to the normative 8-10 per cent which had characterised Western European capital markets during the classic growth years 1040-1340 when the distinctly 'medieval' economy had first been created (cf. Figure 3). Continuing to operate in similar, if not identical, factor market conditions as had prevailed in Western Europe until *ca.* 1330, the populations of East-central Europe had little incentive to change the 'medieval' socio-economic system they had assimilated from the West, which continued unaltered throughout the years 1330-1540.

In the West, therefore, the populations were thus forced during the years 1340-1540 to respond to fundamental alterations in factor market conditions, substituting relatively cheap capital and land for expensive labour, to raise per capita and maintain aggregate product. They had little option but to change in order to remain the same. In Central-eastern Europe the situation was very different. Having assimilated the new 'medieval' socio-economic order the factor market underpinning the new regime did not alter and the indigenous populations were able to continue from 1340-1540 in much the same ways as their Western European counterparts had from 1040-1340, long after the latter had abandoned such

practices. In the process aggregate GDP levels achieved by 1340 across Europe were accordingly maintained, sustaining medieval values into the Early Modern age.

### **Medieval economic growth in historical perspective: A case-study of Britain in the Middle Ages and after**

As has been suggested above the English economy like that of Flanders, Frankia, Lotharingia, Tuscany and Piedmont-Lombardy, underwent during the years 1040-1340 fundamental economic changes which transformed the whole fabric of society and gave birth to a distinct medieval economy. Subsequently from 1340-1540 a similar process of economic change wrought a like transformation in the societies of Central- and South-eastern Europe. The description of these changes given above, however, lacks one primary element – some concept of magnitude. By how much was the life of the contemporary population transformed? To what extent were individuals in the Middle Ages distinguishable, in terms of their command over goods and services, from their Classical-Dark Age or Modern counterparts? The normal means of measuring such changes is in terms of per capita national product. It has been widely held until recently that such economic growth – defined in terms of sustained increases in GDP – has only occurred in modern times. Economic historians have presumed that in a British context, rapid growth began with the Industrial Revolution, and that economic growth before 1700 was very slow, and before 1500 was non-existent. Such a view has evolved in the context of a belief in the uniqueness of the modern world and in the capacity of industrialization to transform society. As embodied in the Rostovian concept of the ‘take-off’, it portrays a stable-state traditional economy undergoing a transition (the ‘take off’) to a phase of self-sustained economic growth, normally associated with industrialisation. It is this assumption, concerning the lack of dynamism in the so-called ‘traditional’ economy, which will be questioned here and new materials used to establish secular patterns of British economic development during the last millennium thereby setting into context the previous discussion of economic change in the Middle Ages. The starting point for this discussion is a recent study in which Graeme Snooks makes a somewhat ‘heroic’ attempt to calculate changes in English



GDP over the last millennium.<sup>44</sup> The results of his investigation reveal the singular inappropriateness of the assumptive base of the conventional wisdom. Roughly speaking, it suggests that there appear to have been in Britain three great waves of growth and expansion over the past millennium: in 1000-1300 (the period under consideration here), 1490-1620 and from the 1770s to the 1990s and beyond. Each was both rapid and prolonged. The first and third upswings took about three hundred years to work themselves out, whilst the second, which was largely conditioned by an earlier century or so of demographic and military disruption, came to an end after one hundred and thirty years. Overall during the first two long-cycles (1086-1688) the population experienced an *average* increase in their per capita incomes of some 0.3 per cent, a rate of increase which was certainly lower than that experienced during the modern age (1688-1988). Yet considered in terms of the growth phase of each individual upswing the picture is very different. During both 'pre-industrial' upswings the population experienced a rate of increase in their per capita incomes (0.6 per cent 1086-1171 and 1.6 per cent 1492-1561) which was greater than during the classic Industrial Revolution (0.52 per cent 1801-32) and in the case of the Tudor upswing was not surpassed again until 1950-73. The twelfth-century population, although almost doubling in size, thus experienced a change in their circumstances, which has, save during the sixteenth century, not been paralleled until the period since the late nineteenth century and even when compared with that period the rate of increase in their income was decidedly respectable.

Inevitably, such a calculation is fraught with difficulties. Whilst the data concerning the base (1086) and terminal points (1688) of the 'pre-industrial' time-series may be regarded as reasonably accurate, the projection concerning changes in GDP during the intervening period, particularly in relation to the later Middle Ages (1340-1492), is far more questionable. Fortunately, at least as far as the twelfth-century upswing is concerned the validity of the original calculations concerning changes in GDP can be born out by an alternative analysis involving the measurement of productivity changes through a study of weighted regional price-rent data. The adoption of more conservative estimates of population change in this period,<sup>45</sup> moreover, would further enhance the an-

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44. Snooks 1993, chapter 7, pp. 231-69, 278-9, 296-301.

45. Blanchard 1996(a), Appendix.

nual rate of growth in per capita income to 1.33 per cent during the years 1086-1141,<sup>46</sup> making it more directly comparable with the subsequent periods 1492-1561 and 1950-73! Also, population changes, which as will have been appreciated are treated here as a dependent rather than determinant variable, in their phases of adjustment in relation to levels of productive capacity, tend to support the same conclusion. In 1086 with a population of about 1.25 million the English economy could support a people about as numerous as those who had inhabited the Roman province of Britannia seven hundred years before. That the late eleventh-century was subject to an endemic state of famine, however, suggests that its capacity to feed the population was not as great as before. Yet a quarter of a millennium later, in 1330, not only was the population (even at a conservative estimate) almost three times greater in size but each individual enjoyed an income which was almost thrice that of his Domesday Book counterpart. Thereafter, it would take another three hundred years before the population again doubled in size and income and yet another three hundred years before the markedly enhanced population (which had increased ten-fold in the interval) also experienced a marked (ten-fold) increase in their per capita income.

To sum up: During the High Middle Ages (1040-1340), the British population (like its counterpart in Flanders, Frankia, Lotharingia, Tuscany and Piedmont-Lombardy) had broken with the classical past and taken that first massive step towards the creation of a totally new economic order. Subsequently in the Late Middle Ages (1240-1540) Central- and South-eastern Europe followed along a similar path. By ca. 1500 throughout Europe the new economic order reigned supreme.

## Bibliography

- Ammann, H. 1937. 'Die Anfänge der deutsch-italienischen Wirtschaftsbeziehungen des Mittelalter', *Rheinische Vierteljahresblätter*, VII, pp. 179-94.  
 Blanchard, I. 1980. 'Consumption and Hierarchy in English Peasant Society, 1400-1600', *Chicago Economic History Workshop Papers*, 20, pp. 1-12.

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46. During the first (1086-1141) of the medieval sub-cycles of the revised series (GDP/cap.-2). The thirteenth century sub-cycles saw the annual rate of growth slow to 0.63 per cent.

- Blanchard, I. 1984. 'Industrial Employment and the Rural Land Market, 1380-1520', in R. M. Smith, ed. *Land, Kinship and Life Cycle* (Cambridge Studies in Population, Economy and Society in Past Time, 1). Cambridge, pp. 227-76.
- Blanchard, I. 1985. 'Le marché égyptien des espèces et la crise de l'or au quinzième siècle'. Unpublished paper presented at the École des Hautes Études en Sciences Sociales, Paris.
- Blanchard, I. 1986. 'The Continental European Cattle Trades, 1400-1600', *Economic History Review*, Second Series, XXXIX (3), pp. 427-60 (reprinted in D. A. Irwin, ed. *Trade in the Pre-Modern Era, 1400-1700* (The Growth of the World Economy, 1). Vol. 2. Cheltenham, UK and Brookfield, US, 1996, pp. 253-86).
- Blanchard, I. 1996(a). *The Middle Ages: A Concept Too Many? Inaugural Lecture*. Edinburgh.
- Blanchard, I. 1996(b). 'Social Structure and Social Organization in an English Village at the Close of the Middle Ages: Chewton 1526', in Edwin Brezette de Windt, ed. *The salt of common life: individuality and choice in the medieval town, countryside and church. Essays presented to J A Raftis on the occasion of his 70th birthday*. Kalamazoo, pp. 307-40.
- Blanchard, I. 2001(a). 'International Capital Markets and their Users, 1450-1750', in Maarten Prak, ed. *Early Modern Capitalism. Economic and Social Change in Europe, 1400-1800*. London and New York, pp. 107-24.
- Blanchard, I. 2001(b). *Mining, Metallurgy and Minting in the Middle Ages*. Vol. 2: Afro-European Supremacy 1125-1225 (African Gold Production and the First European Silver Production Long-Cycle). Stuttgart.
- Blanchard, I. 2005. *Mining, Metallurgy and Minting in the Middle Ages*. Vol. 3: Continuing Afro-European Supremacy, 1250-1450 (African Gold Production and the Second and Third European Silver Production Long-Cycle). Stuttgart.
- Bozic, I. 1952. *Dubrovnik i Turska u XIV i XV veku*. Beograd.
- Campbell, B. M. S. 2000. *English Seigneurial Agriculture, 1250-1450* (Cambridge Studies in Historical Geography). Cambridge.
- Campbell, B. M. S., I. A. Galloway, D. Keene and M. Murphy 1993. *A Medieval Capital and its Grain Supply. Agrarian Production and Distribution in the London Region c 1300* (Historical Geography Research Series, 30). London.
- Cirkovic, S. 1981. 'The Production of Gold, Silver and Copper in the Central Part of the Balkans from the 13th to the 16th Century', in H. Kellenbenz, ed. *Precious Metals in the Age of Expansion* (Beiträge zur Wirtschaftsgeschichte, 2). Nürnberg, pp. 41-70.
- Clark, E. 1981. 'Debt litigation in a late medieval English vill', in J. A. Raftis, ed. *Pathways to Medieval Peasants*. Toronto, pp. 247-79.



- Day, J. 1978. 'The Great Bullion Famine of the Fifteenth Century', *Past and Present*, 79, pp. 3-53.
- Fugedi, E. 1969. 'Pour une analyse démographique de la Hongrie médiévale', *Annales: économies, sociétés, civilisations*, 24, pp. 1299-1312.
- Fugedi, E. 1985. 'The Demographic Landscape of East-Central Europe', in A. Maczak, H. Samsonowicz and P. Burke, eds. *East-Central Europe in Transition 14-17th Centuries*. Cambridge, pp. 47-58.
- Galantai, E. and J. Kristu, eds. 1985. *Johannes de Thurocz: Chronica Hungarorum. Textus*. Budapest.
- Gieysztorowa, I. 1968. 'Research into the demographic history of Poland. A provisional summing-up', *Acta Poloniae Historica*, 18, pp. 5-14.
- Gothain, E. 1887. 'Beiträge zur Geschichte des Bergbau im Schwarzwald', *Zeitschrift für die Geschichte des Oberrheins*, N.F., II, pp. 385-480.
- Graus, F. 1960. 'Die Handelsbeziehungen Böhmens zu Deutschland und Österreich im 14. und zu Beginn des 15. Jahrhunderts', *Historica*, 2, pp. 77-110.
- Graus, F. 1963. 'Autour de la peste noire au XVe siècle en Bohème', *Annales: économies, sociétés, civilisations*, 18, pp. 720-24.
- Habakkuk, H. J. 1952. 'The Long-term Rate of Interest and the Price of Land in the Seventeenth Century', *Economic History Review*, Second Series, V (1), pp. 26-45.
- Hansisches Urkundenbuch*. 6 vols. Halle and Leipzig 1876-95.
- Homan, B. 1922. 'La circolazione delle monete d'oro in Ungheria dal X al XIV secolo e la crisi europea dell'oro nel secolo XIV', *Rivista italiana di numismatica e scienze affini*, Second Series, V, pp. 109-56.
- Jánacek, J. 1972. 'Stríbo a ekonomika českých zemí ve 13. století', *Československý Časopis historický ročník*, XX, pp. 875-906.
- Kavka, F. 1962. 'Der Stand der Forschungen über den Anfang der Städte in der Tschechoslovakei', *Kwartalnik Historii Kultury Materialnej*, X, pp. 546-50.
- Kellenbenz, H. 1979. 'Die europäische Wirtschaft zur Zeit Kaiser Karls IV', *Jahrbuch für fränkische Landesforschung*, 39, pp. 63-85.
- Köhl, O. 1917. *Zur Geschichte des Bergbau im vormaligen Fürstentume Kulmbach-Bayreuth*. Hof.
- Kommentarij na zapisku Ibragima ibn-Jakuba o slavjanach*. Edited by Friedrich Westberg. Saint Petersburg 1903.
- Koran, J. 1955. *Prehledne dejiny, ceskoslovenskeho hornictvi*. 2 vols. Prague.
- Kovacevic, D. 1960. 'Dans la Serbie et la Bosnie médiévale: les mines d'or et d'argent', *Annales: économies, sociétés, civilisations*, 2, pp. 248-58.
- Kowalski, Th., ed. 1946. *Relacja Ibrahima ibn Jak'uba z podrozy do krajów slowianskich w przekazie al-Bekriego* (Monumenta Poloniae Historica, seria II, t. 1). Kraków.
- Krekić, B. 1961. *Dubrovnik (Ragusa) et le Levant au moyen âge*. Paris.

- Laslovsky, J. 1999. 'Field Systems in Medieval Hungary', in B. Nagy and M. Sebok, eds. ... *The Man of Many Devices, Who Wandered Full Many Ways...* *Festschrift in Honor of János M Bak*. Budapest, pp. 432-44.
- Liebermann, F., ed. 1903-16. *Die Gesetze der Angelsachsen*. 3 vols. Halle.
- Maleczynski, K., ed. 1956-64. *Codex diplomaticus nec non epistolaris Silesiae*. 3 vols. Wrocław.
- Malowist, M. 1966. 'The problem of the inequality of economic development in Europe in the later Middle Ages', *Economic History Review*, Second Series, XIX (1), pp. 15-28.
- Molenda, D. 1963. *Górnictwo kruszcowe na terenie złóż slasko-krakowskich do połowy XVI wieku* (Instytut historii kultury materialnej, PAN. Studia i materiały z historii kultury materialnej, t. 15. Studia z dziejów górnictwa i hutnictwa, t. 8). Wrocław.
- Monumenta Germaniae historica. Scriptores*. Vol. XI. Hannover and Leipzig, 1905.
- Monumenta Germaniae historica. Scriptores*. Vol. XXX, 2. Hannover, 1934.
- Neumann, M. 1865. *Geschichte des Wuchers in Deutschland*. Halle.
- Paulinyi, O. 1981. 'The Crown Monopoly of the Refining Metallurgy of Precious Metals and the Technology of the Cameral Refineries in Hungary and Transylvania in the Period of Advanced and Late Feudalism (1325-1700) with Data and Output', in H. Kellenbenz, ed. *Precious Metals in the Age of Expansion* (Beiträge zur Wirtschaftsgeschichte, 2). Nürnberg, pp. 27-40.
- Russell, J. C. 1965. 'Recent advances in medieval demography', *Speculum*, 40, pp. 84-101.
- Samsonowicz, H. 1975. 'Changes in the Baltic Zone in the XIII-XVI Centuries', *Journal of European Economic History*, IV (3), pp. 655-72.
- Samsonowicz, H. 1980. 'War Jagellonisches Ostmitteleuropa eine Wirtschaftseinheit?', *Acta Poloniae Historica*, 41, pp. 85-97.
- Schwarz, K. 1958. *Untersuchungen zur Geschichte der deutschen Bergleute im späteren Mittelalter* (Freiberger Forschungshefte: Kultur und Technik, XX). Berlin: Akademie-Verlag.
- Snooks, G. D. 1993. *Economics without Time*. London.
- Spremic, M. 1971. *Dubrovnici i Aragonci (1442-1495)*. Beograd.
- Spufford, P. 1988. *Money and its use in medieval Europe*. Cambridge.
- Stepkova, J. 1955. 'Denar-kinsar Ibrahima b. Jakuba – a jeho kupni sila v Praze r. 965 n. l.', *Numismatické Listy*, X, pp. 137-39.
- Stepkova, J. 1956. 'Ibrahim ben Jabubla smenne pastredy v Praze', *Casopis Narod. Musea*, CXXI, pp. 17-23.
- Sternberg, K. 1836-38. *Umrisse einer Geschichte der böhmischen Bergwerke*. 2 vols. in 3 parts. Prague.
- Stromer, W. von 1968. 'Nürnberger Unternehmer im Karpatenraum. Ein oberdeutsches Buntmetall-Oligopol 1396-1412', *Kwartalnik Historii Kultury Materialnej*, XVI (4), pp. 641-62.

- Stromer, W. von 1970. *Oberdeutsche Hochfinanz 1350-1450*. Wiesbaden.
- Stromer, W. von 1971. 'Das Zusammenspiel Oberdeutscher und Florentiner Geldleute bei der Finanzierung vom König Ruprechts Italienzug 1401/02', in Hermann Kellenbenz, ed. *Öffentliche Finanzen und privates Kapital im späten Mittelalter und in der ersten Hälfte des 16. Jahrhunderts* (Forschungen zur Sozial- und Wirtschaftsgeschichte, 16). Stuttgart, pp. 50-86.
- Suhle, A. 1964. *Deutsche Münz- und Geldgeschichte von den Anfängen bis zum 15. Jahrhundert*. Berlin.
- Tabaczynski, S. 1966. 'Circulation monétaire dans les villes polonaises au haut moyen-âge vue à la lumière des recherches récentes', in M. Pallottino, R. Peroni, M. Corona and V. Corona, eds. *Atti del VI Congresso Internazionale della Scienze Preistoriche e Protostoriche*. Vol. III: Comunicazioni Sezioni V-VIII. Rome, pp. 208-10.
- Tschan, F. J., ed. 1935. *The Chronicle of the Slavs*, by Helmold the Priest. New Haven.
- Warnke, Ch. 1964. *Die Anfänge des Fernhandels in Polen* (Marburger Ostforschungen, XXII). Würzburg.
- Wee, H. van der 1970. 'Un modèle dynamique de croissance interséculaire du commerce mondial (XIIe-XVIIIe siècles)', *Annales: économies, sociétés, civilisations*, 25, 1, pp. 100-26.
- Westberg, F. 1898. *Ibrahim's-ibn-Ja'kub's Reisebericht über die Slavenländer aus dem Jahre 965* (Mémoires de l'Académie des Sciences de St. Pétersbourg, série viii, t. iii, no. 4). Saint Petersburg.
- Wiessner, H. 1951-53. *Die Geschichte des Kärntner Bergbau*. Second part: Geschichte des Kärntner Buntmetallbergbaues mit besonderer Berücksichtigung des Blei- und Zinkbergbaues. Klagenfurt.
- Wutke, K. 1894. 'Die Salzerschließungsversuche in Schlesien in vorpreussischer Zeit', *Zeitschrift des Vereins für Geschichte und Alterthum Schlesiens*, XXVIII, pp. 99-146.
- Zakrzewski, J., ed. 1877. *Kodeks dyplomatyczny Wielkopolski obejmujacy dokumenta tak jus drukowane, jak dotad nie ogłoszone. Siegajace do roku 1400*. Vol. I. Poznan.
- Zycha, A. 1907. 'Zur neuesten Literatur über die Wirtschaft ... des deutschen Bergbau', *Vierteljahrsschrift für Sozial- und Wirtschaftsgeschichte*, V, pp. 238-92.