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Real Capital Input in OECD Agriculture: A Multinational Comparison

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Abstract

This paper provides a farm sector comparison of relative levels of capital input for seventeen OECD countries for the period 1973-2011. The starting point for construction of a measure of capital input is the measurement of capital stock. Estimates of depreciable capital are derived by representing capital stock at each point of time as a weighted sum of past investments. The weights correspond to the relative efficiencies of capital goods of different ages, so that the weighted components of capital stock have the same efficiency. The capital stocks of land are measured as implicit quantities derived from balance sheet data. We convert estimates of capital stock into estimates of capital service flows by means of capital rental prices. Implicit rental prices for each asset are based on the correspondence between the purchase price of the asset and the discounted value of future service flows derived from that asset. Finally, comparisons of levels of capital input among countries require data on relative prices of capital input. We obtain relative price levels for capital input via relative investment goods prices, taking into account the flow of capital input per unit of capital stock in each country.

Real Capital Input in OECD Agriculture: A Multinational Comparison

1. Introduction

This paper provides estimates of the relative levels of capital input in agriculture for seventeen OECD countries for the period 1973-2011.[1] Measures of capital input are necessary for a description of technology. In a subsequent paper, we integrate these estimates into the production accounts for agriculture, including estimates of real output and real factor input. The accounts underpin estimates of relative levels of technology in agriculture across the seventeen countries. We then focus on capital accumulation as a source of (conditional) convergence.

The starting point for construction of a measure of capital input is the measurement of capital stock. Estimates of depreciable capital are derived by representing capital stock at each point in time as a weighted sum of past investments.[2] The weights correspond to the relative efficiencies of capital goods of different ages, so that the weighted components of capital stock have the same efficiency.

A problem associated with this approach is the implicit assumption of fixed asset lives. In fact, there is wide variation in the service lives of capital assets, even among assets of the same type. Little information is available, however, on the actual service lives of assets. Thus, we adopt a set of assumptions required to model variations in service lives and, once these service lives are determined, the rate of physical depreciation or decline in efficiency of the capital stock. . To estimate the stock of land in each country, we first construct price indexes d of land in agriculture. Observations on land in each country are differentiated by region and by land type.

[1] The countries are Belgium, Denmark, Germany, Greece, Spain, France, Ireland, Italy, Luxembourg, the Netherlands, Portugal, Finland, Sweden, the United Kingdom, Australia, Canada and the United States.

[2] Depreciable assets include transportation equipment, other machinery, and non-residential structures.

The stock of land in each country is then constructed implicitly as the ratio of the value of land in agriculture to the corresponding price index.

Next, we convert estimates of capital stock into estimates of capital service flows. This is accomplished by means of capital rental prices. Implicit rental prices for each asset are based on the correspondence between the purchase price of the asset and the discounted value of future service flows derived from that asset.

Finally, comparisons of relative levels of capital input across countries require data on relative prices of capital input. We obtain relative price levels for capital input via relative investment goods prices, taking into account the flow of capital input per unit of capital stock in each country.

Spatial differences in land characteristics or quality prevent the direct comparison of observed prices. Therefore, we construct indexes of relative prices of land in each country using hedonic methods.

2. Mathematical Model

In this section, we construct estimates of the capital stock and rental price for each asset type in each country. For depreciable assets, the perpetual inventory method is used to develop capital stocks from data on investment in constant prices.[3] For land, capital stocks are measured as implicit quantities derived from balance sheet data. Capital rental prices for each asset are based on the correspondence between the purchase price of the asset and the discounted value of future

[3] Data on investment for member states of the European Union are from Capital Stock Data for the European Union (Beutel, 1997). These series were extended through 2011 using the Economic Accounts for Agriculture (Eurostat). For Australia, data are from the Australian Bureau of Statistics. Agriculture and Agrifood Canada provided data for Canada, while data for the United States were provided by the US Department of Agriculture's Economic Research Service.

service flows derived from that asset.

2.1 Depreciable Assets

Under the perpetual inventory method, the capital stock at the end of each period, say K_t, is measured as the sum of past investments, each weighted by its relative efficiency, say d_τ:

$$K_t = \sum_{\tau=0}^{\infty} d_\tau \, I_{t-\tau} \,. \tag{1}$$

In equation (1), we normalize initial efficiency d_0 at unity and assume that relative efficiency decreases so that:

$$d_0 = 1, \; d_\tau - d_{\tau-1} \le 0, \tau = 0,1,...,T \,. \tag{2}$$

We also assume that every capital good is eventually retired or scrapped so that relative efficiency declines to zero:

$$\lim_{\tau \to \infty} d_\tau = 0 \,. \tag{3}$$

The decline in efficiency of capital goods gives rise to needs for replacement investment in order to maintain the productive capacity of the capital stock. The proportion of a given investment to be replaced at age τ, say m_τ, is equal to the decline in efficiency from age τ-1 to age τ:

$$m_\tau = -\left(d_\tau - d_{\tau-1}\right), \tau = 1,...,T \,. \tag{4}$$

These proportions represent mortality rates for capital goods of different ages.

Replacement requirements, say R_t, are a weighted sum of past investments:

$$R_t = \sum_{\tau=1}^{\infty} m_\tau I_{t-\tau} \,, \tag{5}$$

where the weights are the mortality rates.

Taking the first difference of expression (1) and substituting (4) and (5), we can write

$$
\begin{aligned}
K_t - K_{t-1} &= I_t - \sum_{\tau=1}^{\infty} (d_\tau - d_{\tau-1}) I_{t-\tau} \\
&= I_t - \sum_{\tau=1}^{\infty} m_\tau I_{t-\tau} \\
&= I_t - R_t .
\end{aligned} \tag{6}
$$

The change in capital stock in any period is equal to the acquisition of investment goods less replacement requirements.

To estimate replacement, we must introduce an explicit description of the decline in efficiency. This function, *d*, may be expressed in terms of two parameters, the service life of the asset, say *L*, and a curvature or decay parameter, say β. Initially, we will hold the value of *L* constant and evaluate the efficiency function for various values of β. One possible form for the efficiency function is given by:

$$
\begin{aligned}
d_\tau &= (L - \tau) / (L - \beta \tau), 0 \le \tau \le L \\
d_\tau &= 0, \tau \ge L .
\end{aligned} \tag{7}
$$

This function is a form of a rectangular hyperbola that provides a general model incorporating several types of depreciation as special cases.

The value of β in (7) is restricted only to values less than or equal to one. Values greater than one yield results outside the bounds established by the restrictions on *d*. For values of β greater than zero, the function *d* approaches zero at an increasing rate. For values of β less than zero, *d* approaches zero at a decreasing rate.

Little empirical evidence is available to suggest a precise value for β. However, two studies provide evidence that efficiency decay occurs more rapidly in the later years of service. Utilizing data on expenditures for repairs and maintenance of 745 farm tractors covering the period 1958-74, Penson, Hughes and Nelson (1977) found that the loss of efficiency was very small in the early years of service and increased rapidly as the end of the asset's service life

approached. More recently, Romain, Penson and Lambert (1987) compare the explanatory power of alternative capacity depreciation patterns for farm tractors in a model of investment behavior. They found that the concave depreciation pattern better reflects actual investment decisions.

Taken together, these studies suggest that estimates of β should be restricted to the zero-one interval. Ultimately, the β values selected for this study are 0.75 for structures and 0.5 for machinery and equipment. It is assumed that the efficiency of a structure declines slowly over most of its service life until a point is reached where the cost of repairs exceeds the increased service flows derived from the repairs, at which point the structure is allowed to deteriorate rapidly. The decay parameter for machinery and equipment assumes that the decline in efficiency is more uniformly distributed over the asset's service life.

Consider now the efficiency function that holds β constant and allows L to vary. The concept of variable lives is related to the concept of investment used in this study where investment is composed of different types of capital goods. Each of the different types is a homogeneous group of assets in which the actual service life L is a random variable reflecting usage, maintenance and repair patterns, or simply chance variation. For each type of capital good there exists some mean service life $\overline{L}$ around which there is a distribution of the actual service lives of the assets in the group. In order to determine the actual capital available for production, the actual service lives and the relative frequency of assets with these service lives must be determined. It is assumed that this distribution may be accurately depicted by the standard normal distribution.[4]

[4] Very little data exist on the form of the distribution around the mean life. The only study available was conducted by Winfrey (1935) detailing the actual service lives of a group of assets. Winfrey's S-3 distribution had a bell-shaped appearance akin to the normal distribution. No rigorous tests were performed to determine if the distribution was, in fact, a normal distribution, but based on this admittedly sparse evidence it is assumed that there exists a normal distribution

One property of the normal distribution is related to the infinite nature of the distribution. Without adjustment, the distribution would yield cases where assets were discarded prior to their purchase or assets with unrealistically long service lives. In order to eliminate these extremes, some adjustment is warranted. This adjustment involves truncation of the normal at some point before and after $\overline{L}$. The values of the normal are then adjusted upward within the allowed range of service lives.

In this study, we truncate the distribution at points two standard deviations before and after the mean. Two standard deviations are assumed to be 0.98 times the mean service life. This dispersion parameter was chosen to conform to the observation that assets are occasionally found that are considerably older than the mean service life and that a few assets are accidentally damaged when new. Once the frequency of a service life L is known, the decay function for that particular service life is calculated using the assumed value of β. A similar process is followed for all other possible values of L, and the decay functions are aggregated to derive a replacement function for that type of capital good.[5] This function not only reflects changes in efficiency but also the discard distribution around the mean service life of the asset.

2.2 Land

To obtain the stock of land in each country, we first construct price indexes of land in agriculture. Observations on land in each country are differentiated by region and by land type.[6] The stock of land is then constructed implicitly as the ratio of the value land in agriculture to the

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about the mean life of a particular type of asset. This assumption is used mostly for convenience since tables of values for the normal distribution are readily available.

[5] The aggregate function is constructed as a weighted sum of the individual efficiency functions using as weights the frequency of occurrence.

[6] We compile data on land area and average value per hectare for 3,582 States or regions in the seventeen countries.

corresponding price index.

2.3 Capital Rental Prices

An important innovation in measuring capital input is the rental price of capital originated by Jorgenson (1963, 1973). However, this rental price is based on the particular assumption that the pattern of capacity depreciation is characterized by a decaying geometric series. This assumption implies that replacement is a constant fraction of the capital stock at the beginning at the beginning of each period. Here, we adopt a more general approach.

The behavioral assumption underlying the derivation of the rental price is that firms buy and sell assets so as to maximize the present value of the firm. Let w_K denote the price the firm must pay for a new unit of capital, *p* the price the firm receives for each unit of output, and *r* the real discount rate. An increase in the capital stock *K* by one unit will increase output in each period by $\partial y/\partial K$, the marginal product of capital. Gross revenue in each period will rise by $p(\partial y/\partial K)$, but net revenue will rise by only $p(\partial y/\partial K) - w(\partial R_t/\partial K)$, where $\partial R_t/\partial K$ is the increase in replacement in period *t* required to maintain the capital stock at the new level. Firms should add to their capital stock if the present value of the net revenue generated by an additional unit of capital exceeds the purchase price of the asset. This can be stated algebraically as:

$$\sum_{t=1}^{\infty}\left(p\frac{\partial y}{\partial K} - w_K\frac{\partial R_t}{\partial K}\right)(1+r)^{-t} > w_K . \tag{8}$$

To maximize net present value, firms will continue to add to capital stock until this equation holds as an equality. This requires that:[7]

[7] If $r > 0$, then $\sum_{t=1}^{\infty}(1+r)^{-t} = \dfrac{1}{1-\left(\dfrac{1}{1+r}\right)} - 1 = \dfrac{1}{r}$. Substituting this result in (8) and rearranging terms yields expression (9).

(9) $$p\ \frac{\partial y}{\partial K} = r\, w_K\ +\ r \sum_{t=1}^{\infty}\ w_K\ \frac{\partial R_t}{\partial K}\ (1+r\ )^{-t} = c.$$

The expression for *c* is the implicit rental price of capital corresponding to the mortality distribution *m*. The rental price consists of two components. The first term, rw_K, represents the opportunity cost associated with the initial investment. The second term,

$r\ \sum_{t=1}^{\infty}\ w_K\ \frac{\partial R_t}{\partial K}\ (\ 1+r\ )^{-t}$, is the present value of the cost of all future replacements required to maintain the productive capacity of the capital stock, multiplied by the discount rate.

Expression (9) can be simplified as follows. Let *F* denote the present value of the stream of capacity depreciation on one unit of capital according to the mortality distribution *m*; that is:

(10) $$F = \sum_{\tau=1}^{\infty}\ m_\tau\ (\ 1+r\ )^{-\tau}.$$

It can be shown that:

(11) $$\sum_{t=1}^{\infty}\ \frac{\partial R_t}{\partial K}\ (\ 1+r\ )^{-t} = \sum_{t=1}^{\infty} F^t = \frac{F}{(\ 1-F\ )}$$

so that

(12) $$c = \frac{r\, w_K}{(\ 1-F\ )}.$$ [8]

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[8] For the special case where $d_\tau = \delta(1-\delta)^{\tau-1}$, which was assumed by Jorgenson (1963, 1973),

$$F = \sum_{\tau=1}^{\infty} \delta(1-\delta)^{\tau-1}(1+r)^{-\tau} = \delta/(r+\delta)$$

and

$$c = w_K(r+\delta)$$

which is commonly found in the literature.

To obtain a value for *r* in (12), we employ a rate of return derived from financial market data together with estimates of expected rather than actual rates of price inflation. The nominal rate of return is taken to be the average yield on government bonds over all maturities. An ex ante real rate of return is obtained by expressing inflation, measured by the implicit deflator for gross domestic product, as an ARIMA process.[9] Implicit rental prices *c* are then calculated for each asset type in each country using the expected real rate of return.

3. Real Capital Input

In the previous section, we outlined the development of data on capital stocks and rental prices of capital services. Estimates of capital stock by asset type in each of the seventeen OECD countries are reported in Table 1. The corresponding capital rental prices appear in Table 2. These data are the basis for our estimates of relative capital input in each country.

In Table 3, we report price indexes of capital input in each country. The corresponding quantities of capital input, found in Table 4, are formed implicitly by taking the ratio of the nominal value of capital service flows to the price index of capital input.

Comparisons of relative levels of capital input among countries require data on the relative prices of capital input. A price index that converts the ratio of the nominal values of capital service flows between two countries into an index of real capital input is referred to as a purchasing power parity of the currencies of the two countries. The dimensions of the purchasing power parities are the same as exchange rates. However, the purchasing power parities reflect the relative prices of the components of capital input in each country.

[9] Price inflation is expressed as an AR(1) process. We use this specification after examining the correlation coefficients for autocorrelation, partial and inverse autocorrelation, and performing the unit root and while noise tests. We centered each time series by subtracting its sample mean. The analysis was performed on the centered data.

Although we estimate the decline in efficiency of capital goods separately for all seventeen countries, we assume that the relative efficiency of new capital goods is the same in each country. Therefore, the appropriate purchasing power parity for new capital goods is the purchasing power parity for the corresponding component of investment goods output (World Bank, 2008). To obtain the purchasing power parities for capital input, we must take into account the flow of capital services per unit of capital stock in each country. This is accomplished by multiplying the purchasing power parities for capital goods for any two countries by the ratio of the prices of capital input for the two countries. The resulting price index represents the purchasing power parity for capital input.

Estimating the purchasing power parities for land proves more difficult. Spatial differences in land characteristics or quality prevent the direct comparison of observed prices. Land in agricultural production is heterogeneous in terms of soil type and associated soil characteristics. Failure to account for these differences would lead to biased estimates of relative land input. Therefore, we construct indexes of relative prices of land using hedonic methods.

A hedonic price function expresses the price of a good or service as a function of the quantities of the characteristics it embodies. Thus, the hedonic price function for land may be expressed as $w_L = W(X, D)$, where w_L represents the price of land, X is a vector of characteristics or quality variables, and D is a vector of variables to be defined.

Sanchez et al. (2003) introduced a soil classification system that can be used to identify attributes relevant for crop production. A complete list of attributes, along with definitions, is provided in Table 5, while Figure 1 depicts their levels.[10] The attributes most common in major

[10] Sanchez et al. (2003) provide a global assessment of land resources. Using the Sanchez et al. database, we apply GIS techniques to overlay state and regional boundaries. This overlay gives us the proportion of the land area in each region that exhibits a particular attribute.

agricultural areas in the European countries and Australia are loamy topsoil and moisture stress. These attributes are also important in the United States, with moisture stress dominating in the Northern and Southern Plains, as well as the Pacific region. Soil acidity (i.e., aluminum toxicity) is important in the Southern and Eastern Mountain regions. In Canada, loamy top soil is the most prevalent soil type.

In areas with moisture stress, agriculture is not possible without irrigation. Hence irrigation (*i.e.*, the percentage of the cropland that is irrigated) is included as a separate variable. We also include the interaction between moisture stress and irrigation in the hedonic regression.

In addition to environmental attributes, we include a "population accessibility" score for each region in each country. This index is constructed using a gravity model of urban development, which provides a measure of accessibility to population concentrations (Shi et al., 1997). A gravity index accounts for both population density and the distance from that population. The index increases as population increases and/or distance from the population center decreases.

Other variables (denoted by D) are included in the hedonic regression, and their selection depends not only on the underlying theory but also on the objectives of the study. If the main objective of the study is to obtain price indexes adjusted for quality, as in our case, the only variables that should be included in D are country dummy variables, which will capture all price effects other than quality. After allowing for differences in the levels of the attributes, the part of the price difference not accounted for by the included attributes will be reflected in the country dummy coefficients.

Finally, economic theory places few if any restrictions on the functional form of the hedonic price function. In this study, we adopt a generalized linear form, where the dependent

variable and each of the continuous independent variables is represented by the Box-Cox transformation. This is a mathematical expression that assumes a different functional form depending on the transformation parameter, and which can assume both linear and logarithmic forms, as well as intermediate non-linear functional forms.

Thus the general functional form of our model is given by:

$$w_L(\lambda_0) = \sum_{n=1}^{N} \alpha_n X_n(\lambda_n) + \sum_{m=1}^{M} \gamma_m D_m + \varepsilon, \tag{13}$$

where $w(\lambda_0)$ is the Box-Cox transformation of the dependent price variable, $w_L > 0$; that is:

$$w_L(\lambda_0) = \begin{cases} \dfrac{{w_L}^{\lambda_0} - 1}{\lambda_0}, \lambda_0 \neq 0, \\ \ln w_L, \lambda_0 = 0. \end{cases} \tag{14}$$

Similarly, $X_n(\lambda_n)$ is the Box-Cox transformation of the continuous quality variable X_n where $X_n(\lambda_n) = ({X_n}^{\lambda_n} - 1)/\lambda_n$ if $\lambda_n \neq 0$ and $X_n(\lambda_n) = \ln X_n$ if $\lambda_n = 0$. Variables represented by *D* are country dummy variables, not subject to transformation; λ, α, and γ are unknown parameter vectors, and ε is a stochastic disturbance.

Ordinarily, estimating a Box-Cox model is straightforward. However, the fact that our model contains dichotomous variables with values equal to zero at some point(s) makes for a more difficult application of this procedure. Since the Box-Cox transformation involves logarithms, and the logarithm of zero is not defined, one cannot simply fit the Box-Cox model to the data. In response to this problem, we do not transform those quality variables with values of zero.

Several methods have been used to calculate price indexes adjusted for quality using hedonic functions, including characteristics prices and dummy variable techniques. The latter is used in this study because it is simpler and because Triplett (1989) has provided extensive

evidence of the robustness of the hedonic price indexes to the method of calculation. Using the dummy variable approach, quality-adjusted price indexes are calculated directly from the coefficients on the country dummy variables *D* in the hedonic regression.[11]

Table 6 reports the estimation results for our hedonic price model. Continuous variables include clayey topsoil, loamy topsoil, sandy topsoil, moisture stress, irrigation, and population accessibility. However, because of the extraordinary heterogeneity of the soils across States and regions, a number of attributes are included as dummy variables. These include aluminum toxicity, calcerous soils, salinity, aridic or torric soils, high leaching potential, waterlogging, high phosphorus fixation, alkalinity, cryic and frigid, permafrost, cracking clays, volcanic soils, high organic content, and rock. In each case, the variable takes on a value of one if the level of the attribute exceeds a threshold value, defined as the mean level over all observations, and zero otherwise. Referring to Table 6, the price of land is positively correlated with irrigation, population accessibility, clayey topsoil, loamy topsoil, and sandy topsoil, as expected. The coefficient on the interaction term between irrigation and moisture stress is also positive and significant. Moisture stress has a negative and significant impact on land prices. Aridic or torric soils and high leaching potential are similarly negatively correlated with land prices, but aluminum toxicity (indicating acidic soils), calcareous (highly alkaline soils), and waterlogging (poorly drained soils) are positively correlated with the price of land, which is not entirely intuitive.

Acid soils are, in general, a constraint to crop production that must be addressed, usually by application of lime. But the low pH can be a positive attribute as well. The low pH facilitates the dissolution of phosphate rocks (Sanchez and Salinas, 1981), much as in the manufacture of

[11] Using the parameter estimates from Table 6, the quality adjusted price index for land for country *i* relative to the United States is given by $e^{(D_i - D_{US})}$.

superphosphates. These soils are well suited to the production of fruit and vegetable crops.

Calcareous soils have high pH values. Although they account for a relatively small proportion of the total land area, they are very important because of otherwise high fertility. Prevalent in the Sothern Plains of the United States, these soils are extensively planted to cotton, sorghum, and wheat.

Typical of poorly drained soils is a clayey subsoil that has sufficient anion exchange capacity to hold nitrogen against leaching. Another positive consequence of subsoil anion exchange capacity is the ability of the soil to hold some anions that can turn into pollutants if leached, including phosphates. When combined with management practices such as tiling these soils are highly suitable for production of cereals.

The purchasing power parities for capital input defined over the four asset categories are reported in Table 7.[12] These are relative prices of capital input expressed in terms of national currencies per dollar. As a final step, we divide the relative prices of capital input by the exchange rate to translate purchasing power parities into relative prices in dollars. This allows us to decompose the values of capital service flows into price and quantity components. We report relative prices of capital input in Table 8, while Table 9 provides real values of capital input in each country.

Referring to Table 8, we see that in 1973 the price of capital input in a number of countries was below that in the United States. These relative prices trended higher during the 1970s, but the rapid appreciation of the dollar in the early 1980s reversed this trend. By 1984, the

[12] We have constructed indexes of relative prices across the seventeen countries for the base year, 2005 (see Caves, Christensen, and Diewert, 1982). We have also constructed price indexes of capital input in each country for the period 1973-2011. We obtain indexes of capital input prices in each country relative to the United States for each year by linking the time series price indexes with estimates of relative prices for the base year.

prices of capital input had fallen to their lowest level relative to the United States. The prices of capital input increased relative to the United States after 1984, a consequence of the depreciation of the dollar and declining capital costs in the United States, reaching a peak in the early 1990s. But the subsequent appreciation of the dollar resulted in a decline in relative prices. By 2001, the relative costs of capital were again below that in the United States. A weaker dollar after 2001 produced yet another break in trend, as relative prices moved higher. The financial crisis of 2008 and the accompanying weakness in the bond market saw relative prices of capital input in Ireland and Portugal reach record levels.

As can be seen in Table 9, thirteen of the seventeen countries in the comparison achieved absolute **in**creases in the level of capital input over the 1973-2011 period. Only Germany, Luxemburg, Sweden and the United States exhibited **negative rates of growth** in capital input. More interesting were the gains in levels of capital input relative to the United States after 1980. Sharply higher real interest rates during the early 1980s and the ensuing recession led to a decade-long decline in real capital expenditures. Ball, Schimmelpfennig, and Wang (2013) show that purchases of machine services (including the leasing of assets) exhibited a counter-cyclical pattern, suggesting the substitution of purchased machine services for own capital input. By the early 2000s, the level of capital input in United States agriculture had fallen some 30 percent. Growth in capital input recovered during the 2000s. Still, the European countries, Canada and Australia all posted gains in relative levels of capital input between 1980 and 2011.

4. Concluding Remarks

Our objective has been to provide a farm-sector comparison of relative levels of capital input among seventeen OECD countries for the period 1973-2011. The starting point for construction of a measure of capital input is the measurement of capital stock. Estimates of depreciable capital

input are derived by representing capital stock at each point of time as a weighted sum of past investments. The weights correspond to the relative efficiencies of capital goods of different ages, so that the weighted components of capital stock have the same efficiency.

A problem associated with this approach is the assumption of fixed asset lives. In fact, there is wide variation in the service lives of capital assets, even among assets of the same type. Little information is available, however, on the actual service lives of assets. Thus, we develop a model to account for variations in service lives and, once the service lives are determined, the rate of physical depreciation or decline in efficiency of the capital stock.

To obtain the stock of land in each country, we first construct price indexes of land in agriculture. The stock of land is then constructed implicitly as the ratio of the value land in agriculture to the corresponding price index.

We convert estimates of capital stock into estimates of capital service flows by means of capital rental prices. Implicit rental prices for each asset type are based on the correspondence between the purchase price of the asset and the discounted value of future service flows derived from that asset.

Finally, comparisons of relative levels of capital input among countries require data on the relative prices of capital input. A price index that converts the ratio of the nominal values of capital service flows between two countries into an index of real capital input is referred to as a purchasing power parity of the currencies of the two countries.

Although we estimate the decline in efficiency of capital goods separately for all seventeen countries, we assume that the relative efficiency of new capital goods is the same in each country. Therefore, the appropriate purchasing power parity for new capital goods is the purchasing power parity for the corresponding component of investment goods output. To obtain

the purchasing power parities for capital input, we must take into account the flow of capital services per unit of capital stock in each country. This is accomplished by multiplying the purchasing power parities for capital goods for any two countries by the ratio of the prices of capital input for the two countries. The resulting price index represents the purchasing power parity for capital input.

Estimating the purchasing power parities for land proves more difficult. Spatial differences in land quality prevent the direct comparison of observed prices. Therefore, we estimate relative prices of land in each country using hedonic methods.

The purchasing power parities are relative prices of capital input expressed in terms of national currencies per dollar. We divide the relative prices of capital input by the exchange rate to translate the purchasing power parities into relative prices in dollars. This allows us to decompose the values of capital service flows into price and quantity components.

A final reference to Table 8 reveals that capital input prices increased relative to the United States during the 1970s, but the rapid appreciation of the dollar in the early 1980s reversed this trend. By 1984, the price of capital input had fallen to its lowest level relative to the United States. Relative prices again trended higher after 1984, a consequence of the depreciation of the dollar and declining capital costs in the United States, reaching a peak in the early 1990s. But the subsequent appreciation of the dollar resulted in a decline in relative prices. By 2001, the relative prices of capital were again below that in the United States. A weaker dollar after 2001 produced yet another break in trend. The financial crisis of 2008 and the accompanying weakness in the bond market saw relative prices of capital input in Ireland and Portugal reach record levels. Referring to Table 9, we see that thirteen of the seventeen countries in the comparison achieved absolute increases in the level of capital input over the 1973-2011 period.

More interesting were the gains in levels of capital input relative to the United States after 1980. Sharply higher real interest rates during the early 1980s and the ensuing recession led to a decade-long decline in real capital expenditures. Ball, Schimmelpfennig, and Wang (2013) show that purchases of machine services (including the leasing of assets) exhibited a counter-cyclical pattern, suggesting the substitution of purchased machine services substituted for own capital input. By the early 2000s, the level of capital input in United States agriculture was reduced by nearly one third. We observed modest growth in capital input during the 2000s. Still, the European countries, Canada and Australia all posted gains in relative levels of capital input between 1980 and 2011.

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Table 1. Capital Stocks, 1973-2011 (Millions of 2005 national currencies)

Year	Belgium	Denmark	Germany	Greece	Spain	France	Ireland	Italy	Luxem-burg	NL	Portugal	Finland	Sweden	UK	Australia	Canada	US
Transportation equipment:																	
1973	276	3462	7021	4197	4733	2529	348	2368	56	607	800	591	6714	634	7532	5426	20237
1974	303	4048	7264	4393	4960	2785	384	2491	59	699	988	622	6392	699	7817	6366	20363
1975	332	4512	7477	4513	5187	3113	373	2610	59	802	1224	650	6324	738	8017	7090	20262
1976	339	4999	7732	4721	5368	3268	388	2622	59	856	1475	663	6427	762	8204	8117	20434
1977	359	5616	8133	4988	5671	3469	412	2704	57	918	1621	663	6510	825	8536	9054	21769
1978	371	6048	8529	5151	5745	3581	443	2744	63	1036	1747	655	6379	883	8793	9920	23127
1979	391	6308	8800	5251	5988	3637	489	2801	65	1150	1778	650	6082	917	9075	10786	24276
1980	404	6351	9268	5629	6090	3754	538	2802	61	1351	1814	661	5995	970	9515	11762	25679
1981	394	6057	9618	6064	6599	3857	577	2978	67	1406	1815	664	5672	961	9893	11919	25581
1982	386	5734	10101	6228	6409	4046	627	3102	62	1454	1812	660	5561	982	10170	11606	24669
1983	376	5459	10228	6257	6152	4106	640	3178	59	1479	1729	646	5297	978	10203	11214	23446
1984	355	5106	10522	6134	5829	4136	635	3198	55	1587	1689	628	5071	996	10264	10866	22618
1985	346	4797	10622	6003	5554	4102	637	3162	50	1604	1603	602	4900	1015	10592	10391	21646
1986	329	4639	10692	6032	5358	4017	643	3059	46	1608	1515	593	4621	1013	10654	9483	20270
1987	324	4594	10666	5495	5139	3823	667	3031	42	1542	1455	581	4322	963	10274	8603	18881
1988	328	4420	10857	4914	4964	3768	673	3028	41	1567	1458	567	4149	966	9929	7781	18163
1989	326	4201	11021	4393	4791	3628	693	3024	41	1551	1722	568	3959	960	9856	6965	17750
1990	320	4211	11306	3964	4602	3706	777	3050	41	1575	1861	560	3953	966	9795	6281	17599
1991	310	4202	11589	3585	4383	3742	863	3067	41	1617	1699	547	3865	955	9478	5569	17573
1992	287	4278	12393	3210	4175	3703	890	3072	43	1644	1559	512	3625	919	8963	5099	17232
1993	277	4223	12916	2953	3811	3616	901	3021	43	1677	1492	474	3485	897	8387	4703	16855
1994	258	4124	12969	2643	3456	3491	909	2903	42	1601	1384	440	3405	907	7833	4251	16640
1995	236	4037	12973	2406	3259	3435	963	2816	42	1538	1293	414	3350	927	7616	3856	16422
1996	218	4036	12923	2307	3152	3417	984	2792	41	1483	1196	397	3284	961	7782	3616	16451
1997	205	4083	12948	2279	3189	3448	1009	2791	40	1440	1132	383	3258	986	8088	3338	16957
1998	197	4175	12617	2375	3357	3535	1016	2788	39	1422	1085	383	3257	979	8623	3222	17945
1999	194	4176	12542	2524	3628	3661	1002	2761	38	1409	1088	390	3233	937	9284	3212	19125
2000	198	4135	12549	2748	3756	3796	983	2795	36	1419	1120	402	3254	895	9841	3105	20026
2001	201	4147	12501	2921	3814	3911	957	2819	35	1441	1144	411	3400	856	10137	3015	20900
2002	206	4229	12481	3031	3820	3972	930	2909	33	1463	1163	422	3512	836	10109	2828	22010
2003	215	4230	12458	3194	3842	4018	900	3072	32	1429	1175	437	3653	822	10132	2735	22998
2004	219	4201	12024	3346	3942	4071	873	3145	34	1407	1151	449	3739	824	10344	2557	24140
2005	225	4200	11963	3433	4047	4144	848	3280	36	1386	1157	457	3812	839	10826	2427	25380
2006	229	4242	12034	3517	4015	4203	825	3360	36	1360	1118	458	3847	841	11355	2319	26416
2007	239	4368	12424	3540	3994	4238	803	3445	36	1375	1080	453	3880	849	11472	2194	26593
2008	256	4509	13038	3729	4049	4338	783	3528	36	1460	1071	453	3992	884	11540	2190	27140
2009	256	4575	13980	3868	4100	4498	768	3565	38	1564	1068	452	4107	934	11795	2212	27661
2010	270	4407	14071	3779	3976	4503	737	3434	39	1573	1045	448	4127	967	11869	2375	27396
2011	281	4232	14063	3502	3861	4449	700	3246	39	1582	1033	442	4134	998	12110	2569	26867

Table 1. Continued

Year	Belgium	Denmark	Germany	Greece	Spain	France	Ireland	Italy	Luxem-burg	NL.	Portugal	Finland	Sweden	UK	Australia	Canada	US
	Machinery:																
1973	3484	25085	61019	7274	9040	40257	1135	30877	178	9541	460	4930	74514	11913	30027	14124	165563
1974	3715	30403	62727	7575	9152	43016	1335	33208	186	10349	552	4890	73324	12164	30885	14854	176448
1975	3864	33856	62818	7809	9106	45635	1405	34955	192	11021	672	4853	72885	11987	31634	16168	185102
1976	3903	36916	62849	8165	9070	47703	1449	36731	192	11367	808	4880	73701	11746	32371	17732	189909
1977	4042	40191	63178	8602	9172	49630	1622	39162	181	11759	922	4956	74977	11705	33318	19627	194552
1978	4166	43187	64220	8932	9387	50889	1799	41427	175	12540	1041	4985	74966	11686	34195	20920	197926
1979	4375	46644	65638	9027	9781	52639	1966	43685	181	13550	1115	4966	74284	11702	35132	22104	204431
1980	4460	50284	66749	9441	10368	54113	2117	45973	190	14529	1205	4996	73473	11581	36309	23586	211561
1981	4412	51040	66830	9845	11009	55180	2185	47130	182	15001	1306	5110	71494	11183	37476	24546	212238
1982	4302	50494	65635	9872	11772	55859	2311	47418	181	15266	1388	5238	69501	10950	38599	25117	209914
1983	4271	50225	64696	9936	12428	56949	2347	47206	193	15586	1434	5420	68419	10903	39407	24636	201279
1984	4182	50216	64466	9888	13124	57482	2344	46752	199	16030	1437	5536	67506	11122	40195	23645	191906
1985	4116	50871	63660	9836	13714	57740	2319	46329	200	16163	1429	5600	67275	11378	41345	22802	182505
1986	4051	52477	62817	9920	13910	57661	2268	45915	196	16404	1423	5674	66103	11451	42251	21743	170415
1987	4043	53730	62020	9554	14348	57131	2179	45491	191	16276	1462	5662	64460	11194	42687	20586	158254
1988	3999	53906	60983	9031	14617	56504	2134	45043	189	16297	1553	5580	62966	10991	43199	19358	149844
1989	3946	53292	60348	8643	14506	56528	2132	44950	190	16267	1669	5546	62169	10840	44084	18124	142594
1990	3880	53461	60197	8304	14032	56698	2163	44875	190	16264	1779	5597	61697	10692	44940	16903	137310
1991	3829	53437	60551	7887	13253	56509	2134	44533	200	16348	1905	5575	60627	10447	45313	15771	133279
1992	3688	52483	59980	7441	12853	55812	2095	44124	210	16304	1975	5375	58421	10165	45274	14660	128436
1993	3615	51399	59049	7120	11977	54624	2056	43737	216	16328	2006	5018	55733	9981	45000	13693	123013
1994	3475	49550	57151	6658	11139	53334	2028	42978	218	15987	1934	4691	53112	10051	44630	13669	118349
1995	3314	48737	55278	6238	10433	52497	2047	42707	223	15557	1877	4400	51421	10222	44232	13500	114077
1996	3161	48684	53574	5884	9891	52135	2123	42276	222	15172	1854	4259	49712	10498	43840	13282	109461
1997	3027	49233	52078	5588	9614	52198	2168	42225	223	14814	1841	4138	48473	10676	43600	13189	105903
1998	2921	50154	50926	5385	9256	52471	2194	42102	222	14578	1835	4084	47568	10576	43497	13655	103210
1999	2842	50189	50064	5223	8935	53106	2265	42253	222	14360	1842	4050	46536	10178	43475	14214	101396
2000	2786	49820	49446	5157	8574	53801	2345	42540	217	14251	1859	4055	46062	9772	43468	14168	99176
2001	2741	49995	48914	5115	8460	54116	2410	42976	214	14218	1880	4035	46796	9385	43713	14111	97265
2002	2709	50870	47883	5066	8475	54002	2463	43170	210	14158	1918	4047	47309	9132	44086	13902	96754
2003	2719	51074	47097	5148	8608	53879	2523	43576	208	13774	1940	4117	48236	8914	44544	13807	96327
2004	2700	50911	46430	5383	8730	53933	2597	44228	220	13416	1966	4189	48716	8843	45164	13888	97122
2005	2713	50781	45744	5606	9097	54226	2700	45388	232	13047	2005	4254	49171	8888	46042	14010	99864
2006	2740	51249	44243	6074	9254	54438	2802	46114	233	12666	2047	4294	49324	8831	47172	14132	101103
2007	2835	52453	43115	6325	9825	54724	2952	47008	239	12457	2086	4342	49535	8825	47988	14089	100493
2008	3010	54535	42387	6878	10114	55655	3183	47870	240	12622	2102	4459	50598	9037	48693	14496	101320
2009	3043	55834	42604	7468	10589	57084	3393	48631	251	12913	2128	4549	51755	9379	49809	14885	105307
2010	3240	54725	42104	7778	11365	57410	3288	48134	259	12830	2121	4596	52029	9601	51072	15259	105659
2011	3428	53480	41328	7752	11918	57222	3164	48166	267	12787	2114	4630	52222	9802	52076	15753	107462

Table 1. continued

Year	Belgium	Denmark	Germany	Greece	Spain	France	Ireland	Italy	Luxem-burg	NL.	Portugal	Finland	Sweden	UK	Australia	Canada	US
Land:																	
1973	26415	438169	236456	25631	282069	180791	77358	321724	1892	62155	38300	12904	110044	127930	269822	142722	1268016
1977	25585	435190	231980	26274	272923	179392	75849	308657	1878	60700	37795	12827	109760	126457	261709	141718	1275034
1978	25376	434537	229558	26758	271184	178997	76017	306285	1850	60263	37687	12782	109779	126412	263547	141390	1277391
1979	25109	433882	216392	26502	268588	178706	76268	303914	1850	59898	37570	12726	109249	126226	266009	140948	1272532
1980	24835	431604	215174	26787	267524	178271	75724	301542	1850	59502	37520	12569	108967	127025	268059	140711	1262330
1981	24660	430423	214377	26952	267220	177640	75918	299163	1821	59217	37439	12483	108188	126182	267221	140790	1249857
1982	24565	428932	213335	27138	267361	177061	75968	296606	1807	59052	37375	12335	108433	125904	264540	140194	1238136
1983	24495	422572	212421	27604	267301	176620	76059	295063	1821	59160	37305	12264	108038	125567	263496	139914	1229415
1984	24427	423955	211736	27967	267741	175689	76137	293351	1821	59389	37265	11086	107711	125685	263677	139656	1223078
1985	24322	420650	211187	28251	268256	175530	76351	291633	1807	59688	37226	12274	107241	124996	256638	139379	1217873
1986	24199	418590	210801	28303	267635	174945	76459	289918	1821	59027	37189	12046	106660	124777	250214	139046	1212626
1987	24094	415469	210044	28660	267965	174428	79436	288214	1807	59093	37119	11488	105982	125864	249023	138948	1206274
1988	23954	413236	209232	28757	268782	173538	78120	286516	1793	59038	37264	11792	105250	125776	247011	138653	1198172
1989	23819	411620	208740	28822	268243	171516	76209	284821	1793	58849	36987	11777	104594	124426	244890	138356	1189206
1990	23749	413598	235926	29266	266941	171112	74034	282761	1807	58921	37597	10891	104322	124274	243676	138079	1180697
1991	23644	410650	231593	29244	263618	170775	72816	280302	1793	58487	37366	11911	102451	124000	242219	137797	1174177
1992	23571	409060	230538	29717	262228	170843	72391	277433	1793	58365	37889	12107	101946	124090	240690	138001	1171175
1993	23802	382942	231609	29887	260076	170853	72171	274567	1807	58566	37576	11221	102302	124090	242876	138218	1172668
1994	23984	360715	232493	30001	258240	170778	71971	271703	1807	58174	37710	11031	102458	123772	243484	138487	1177070
1995	24047	367125	232087	30192	253853	170486	71997	268897	1807	57958	37788	11455	102983	122749	242908	138746	1182373
1996	24213	371383	231357	30390	251419	170256	71234	266026	1793	58325	37286	10382	104404	122593	244309	139783	1186867
1997	24364	375616	230894	30847	253675	169994	72602	263221	1802	57859	37064	10729	104093	122086	244136	139517	1189071
1998	24513	373658	231320	30380	252816	169920	72350	260427	1809	58079	37111	11244	103483	121624	243088	139248	1187898
1999	24551	360672	227169	30397	249648	169856	72398	257663	1813	57836	36244	11389	102468	121374	244702	138977	1183333
2000	24559	360332	225762	30156	247617	169794	72135	254477	1816	57499	35995	11707	101262	119468	244530	138704	1176259
2001	24469	363657	225381	30241	247592	169547	71597	253160	1820	56768	35762	11858	100865	121443	242340	138430	1167679
2002	24516	362954	224405	30521	246762	169563	71038	251386	1823	57298	35368	11927	100522	121776	242183	138552	1158797
2003	24467	359803	225772	30483	246604	169231	70992	249645	1823	56536	35109	11928	100564	121510	242890	138675	1150720
2004	24496	363019	225957	30097	245178	169043	69966	247819	1822	56585	35134	12278	100576	121136	244682	138802	1143189
2005	24348	372112	225733	29294	245875	169033	69821	246036	1837	56847	35105	12018	101496	120889	238915	138940	1135817
2006	24264	373255	224066	28336	239962	168507	69156	243863	1834	56357	35055	12680	99956	122462	232476	139093	1128306
2007	24090	364869	224073	29563	231194	167928	69358	240155	1862	56172	35004	12464	99557	121222	231767	137874	1120485
2008	24150	366669	223750	29147	235619	167236	75102	233958	1856	56569	34954	11709	98542	121164	225300	136629	1118610
2009	23997	359524	223137	28898	235937	166683	74639	240034	1860	56211	34909	11423	98737	118608	220728	135393	1118210
2010	23870	361647	219771	28957	236621	166129	74103	243874	1865	54905	34865	12448	98627	117938	224550	134160	1116668
2011	23522	362318	220183	30929	234824	165851	73849	243194	1869	54540	34822	11702	98105	117725	228382	132931	1113660

Table 2. Capital rental prices, 1973-2011

Year	Belgium	Denmark	Germany	Greece	Spain	France	Ireland	Italy	Luxem-burg	NL	Portugal	Finland	Sweden	UK	Australia	Canada	US
Transportation equipment:																	
1973	0.0511	0.0272	0.0328	0.0034	0.0173	0.0341	0.0258	0.0122	0.0294	0.0690	0.0035	0.0225	0.0224	0.0214	0.0320	0.0501	0.0586
1974	0.0529	0.0294	0.0347	0.0041	0.0186	0.0372	0.0301	0.0152	0.0316	0.0698	0.0039	0.0262	0.0222	0.0254	0.0337	0.0507	0.0582
1975	0.0613	0.0344	0.0364	0.0048	0.0210	0.0429	0.0330	0.0187	0.0371	0.0709	0.0038	0.0301	0.0236	0.0320	0.0380	0.0548	0.0606
1976	0.0635	0.0371	0.0392	0.0055	0.0222	0.0487	0.0420	0.0219	0.0429	0.0711	0.0038	0.0376	0.0284	0.0388	0.0442	0.0576	0.0650
1977	0.0666	0.0395	0.0398	0.0065	0.0220	0.0527	0.0491	0.0272	0.0513	0.0736	0.0051	0.0427	0.0324	0.0406	0.0496	0.0594	0.0751
1978	0.0694	0.0435	0.0409	0.0079	0.0270	0.0575	0.0567	0.0307	0.0494	0.0777	0.0087	0.0501	0.0370	0.0466	0.0545	0.0672	0.0788
1979	0.0727	0.0502	0.0438	0.0094	0.0313	0.0603	0.0633	0.0362	0.0533	0.0803	0.0121	0.0583	0.0418	0.0533	0.0594	0.0762	0.0880
1980	0.0818	0.0585	0.0486	0.0119	0.0366	0.0669	0.0623	0.0388	0.0563	0.0860	0.0158	0.0687	0.0447	0.0609	0.0646	0.0902	0.1019
1981	0.0930	0.0709	0.0545	0.0147	0.0420	0.0782	0.0676	0.0470	0.0616	0.0907	0.0183	0.0810	0.0582	0.0684	0.0717	0.1096	0.1174
1982	0.1040	0.0851	0.0594	0.0183	0.0497	0.0903	0.0740	0.0554	0.0657	0.0945	0.0227	0.0899	0.0618	0.0730	0.0808	0.1171	0.1277
1983	0.1064	0.0941	0.0621	0.0225	0.0597	0.1017	0.0830	0.0604	0.0713	0.1037	0.0263	0.0929	0.0681	0.0769	0.0849	0.1156	0.1366
1984	0.1128	0.0982	0.0637	0.0265	0.0671	0.1089	0.0910	0.0674	0.0742	0.1050	0.0459	0.1020	0.0788	0.0832	0.0899	0.1292	0.1431
1985	0.1165	0.0968	0.0674	0.0291	0.0694	0.1089	0.0924	0.0722	0.0788	0.1165	0.0566	0.1082	0.0794	0.0890	0.0997	0.1359	0.1427
1986	0.1177	0.0966	0.0695	0.0354	0.0900	0.1033	0.1021	0.0799	0.0663	0.1303	0.0734	0.1108	0.0803	0.0909	0.1142	0.1417	0.1380
1987	0.1182	0.1046	0.0702	0.0474	0.0976	0.1083	0.1044	0.0830	0.0884	0.1369	0.0901	0.1173	0.0848	0.0998	0.1314	0.1549	0.1499
1988	0.1204	0.1136	0.0740	0.0547	0.1037	0.1137	0.1119	0.0880	0.0911	0.1419	0.1031	0.1257	0.0900	0.1046	0.1396	0.1548	0.1534
1989	0.1261	0.1226	0.0790	0.0644	0.1112	0.1207	0.1255	0.0978	0.0974	0.1485	0.1094	0.1331	0.0939	0.1095	0.1437	0.1614	0.1568
1990	0.1303	0.1258	0.0847	0.0783	0.1207	0.1323	0.1323	0.1052	0.1058	0.1591	0.1304	0.1415	0.1016	0.1189	0.1465	0.1737	0.1612
1991	0.1353	0.1273	0.1054	0.1063	0.1198	0.1431	0.1291	0.1081	0.1121	0.1692	0.1365	0.1501	0.1030	0.1187	0.1479	0.1767	0.1567
1992	0.1406	0.1265	0.1032	0.1300	0.1235	0.1518	0.1362	0.1172	0.1187	0.1735	0.1256	0.1357	0.1032	0.1271	0.1528	0.1672	0.1580
1993	0.1384	0.1338	0.1014	0.1507	0.1167	0.1565	0.1384	0.1227	0.1198	0.1739	0.1086	0.1317	0.1004	0.1300	0.1585	0.1724	0.1647
1994	0.1408	0.1291	0.1022	0.1686	0.1248	0.1588	0.1400	0.1248	0.1232	0.1775	0.0928	0.1416	0.1115	0.1398	0.1735	0.1808	0.1823
1995	0.1452	0.1348	0.1042	0.1594	0.1384	0.1648	0.1463	0.1385	0.1268	0.1808	0.1524	0.1498	0.1281	0.1534	0.1838	0.1909	0.1905
1996	0.1448	0.1394	0.1095	0.1624	0.1318	0.1692	0.1486	0.1487	0.1392	0.1790	0.1611	0.1155	0.1359	0.1607	0.1809	0.1945	0.1919
1997	0.1478	0.1435	0.1106	0.1549	0.1277	0.1712	0.1433	0.1494	0.1401	0.1758	0.1692	0.1210	0.1357	0.1609	0.1734	0.2030	0.1988
1998	0.1493	0.1394	0.1060	0.1519	0.1281	0.1612	0.1345	0.1402	0.1521	0.1664	0.1578	0.1144	0.1316	0.1608	0.1672	0.2117	0.1913
1999	0.1524	0.1374	0.1059	0.1474	0.1282	0.1549	0.1444	0.1433	0.1540	0.1667	0.1466	0.1098	0.1316	0.1613	0.1729	0.2276	0.1936
2000	0.1557	0.1380	0.1102	0.1508	0.1334	0.1550	0.1460	0.1477	0.1628	0.1714	0.1469	0.1228	0.1365	0.1624	0.1774	0.2203	0.1974
2001	0.1508	0.1405	0.1141	0.1458	0.1421	0.1562	0.1466	0.1500	0.1764	0.1708	0.1501	0.1248	0.1158	0.1640	0.1715	0.2111	0.1834
2002	0.1454	0.1414	0.1138	0.1511	0.1406	0.1584	0.1471	0.1485	0.1803	0.1662	0.1493	0.1253	0.1222	0.1663	0.1720	0.2276	0.1768
2003	0.1455	0.1420	0.1108	0.1506	0.1437	0.1577	0.1494	0.1463	0.1689	0.1682	0.1605	0.1302	0.1304	0.1622	0.1726	0.2200	0.1703
2004	0.1442	0.1407	0.1092	0.1519	0.1435	0.1575	0.1508	0.1481	0.1606	0.1618	0.1550	0.1415	0.1294	0.1577	0.1695	0.1985	0.1673
2005	0.1482	0.1374	0.1063	0.1509	0.1470	0.1584	0.1519	0.1510	0.1513	0.1624	0.1541	0.1429	0.1325	0.1583	0.1643	0.1739	0.1695
2006	0.1625	0.1460	0.1086	0.1543	0.1504	0.1613	0.1519	0.1558	0.1548	0.1613	0.1583	0.1492	0.1372	0.1595	0.1606	0.1713	0.1707
2007	0.1685	0.1474	0.1135	0.1582	0.1528	0.1667	0.1519	0.1616	0.1610	0.1591	0.1591	0.1703	0.1409	0.1622	0.1606	0.1678	0.1646
2008	0.1744	0.1700	0.1155	0.1623	0.1569	0.1727	0.1565	0.1643	0.1589	0.1661	0.1660	0.1646	0.1422	0.1652	0.1607	0.1569	0.1620
2009	0.1846	0.1753	0.1134	0.1577	0.1599	0.1843	0.1684	0.1667	0.1566	0.1652	0.1752	0.1644	0.1475	0.1626	0.1582	0.1566	0.1614
2010	0.1954	0.1807	0.1099	0.1748	0.1604	0.1921	0.1880	0.1699	0.1555	0.1689	0.1884	0.1688	0.1549	0.1759	0.1713	0.1791	0.1677
2011	0.2083	0.1852	0.1074	0.1982	0.1557	0.1915	0.2050	0.1822	0.1535	0.1737	0.2081	0.1733	0.1559	0.1583	0.1639	0.1574	0.1684

Table 2. Continued

Year	Belgium	Denmark	Germany	Greece	Spain	France	Ireland	Italy	Luxem-burg	NL	Portugal	Finland	Sweden	UK	Australia	Canada	US
	Machinery:																
1973	0.0386	0.0223	0.0335	0.0027	0.0102	0.0230	0.0250	0.0083	0.0340	0.0305	0.0036	0.0210	0.0174	0.0174	0.0222	0.0393	0.0284
1974	0.0410	0.0240	0.0360	0.0031	0.0116	0.0254	0.0297	0.0105	0.0349	0.0329	0.0041	0.0240	0.0187	0.0215	0.0235	0.0406	0.0285
1975	0.0467	0.0279	0.0378	0.0038	0.0132	0.0314	0.0339	0.0130	0.0396	0.0350	0.0040	0.0281	0.0218	0.0273	0.0264	0.0443	0.0301
1976	0.0473	0.0297	0.0390	0.0040	0.0156	0.0327	0.0426	0.0155	0.0458	0.0380	0.0039	0.0356	0.0235	0.0326	0.0305	0.0509	0.0347
1977	0.0488	0.0315	0.0397	0.0046	0.0177	0.0340	0.0449	0.0169	0.0571	0.0411	0.0052	0.0418	0.0255	0.0331	0.0341	0.0521	0.0424
1978	0.0503	0.0347	0.0408	0.0051	0.0228	0.0359	0.0512	0.0186	0.0533	0.0437	0.0088	0.0487	0.0277	0.0372	0.0375	0.0569	0.0446
1979	0.0528	0.0401	0.0436	0.0061	0.0264	0.0364	0.0560	0.0212	0.0559	0.0456	0.0109	0.0578	0.0301	0.0426	0.0408	0.0661	0.0500
1980	0.0600	0.0474	0.0487	0.0074	0.0200	0.0397	0.0571	0.0242	0.0609	0.0489	0.0138	0.0684	0.0341	0.0485	0.0444	0.0798	0.0574
1981	0.0691	0.0581	0.0553	0.0092	0.0346	0.0468	0.0643	0.0248	0.0676	0.0550	0.0173	0.0805	0.0422	0.0543	0.0499	0.0992	0.0721
1982	0.0786	0.0701	0.0613	0.0122	0.0391	0.0573	0.0712	0.0304	0.0719	0.0609	0.0234	0.0830	0.0457	0.0576	0.0574	0.1026	0.0765
1983	0.0812	0.0772	0.0626	0.0143	0.0466	0.0657	0.0792	0.0346	0.0801	0.0633	0.0325	0.0860	0.0495	0.0604	0.0595	0.0992	0.0846
1984	0.0867	0.0790	0.0642	0.0174	0.0530	0.0698	0.0835	0.0384	0.0851	0.0631	0.0436	0.0976	0.0550	0.0660	0.0628	0.1134	0.0907
1985	0.0897	0.0765	0.0671	0.0199	0.0538	0.0691	0.0905	0.0417	0.0895	0.0663	0.0487	0.1138	0.0579	0.0706	0.0717	0.1169	0.0881
1986	0.0893	0.0760	0.0685	0.0239	0.0611	0.0675	0.0936	0.0455	0.0935	0.0690	0.0588	0.1070	0.0591	0.0710	0.0842	0.1147	0.0785
1987	0.0890	0.0836	0.0687	0.0302	0.0652	0.0679	0.0922	0.0486	0.1001	0.0740	0.0858	0.1096	0.0616	0.0785	0.0976	0.1215	0.0826
1988	0.0906	0.0910	0.0715	0.0338	0.0688	0.0701	0.0917	0.0512	0.1043	0.0782	0.0916	0.1165	0.0648	0.0814	0.1028	0.1194	0.0820
1989	0.0960	0.0982	0.0747	0.0403	0.0744	0.0747	0.0990	0.0580	0.1120	0.0831	0.1065	0.1234	0.0713	0.0843	0.1059	0.1219	0.0832
1990	0.0995	0.1017	0.0802	0.0492	0.0827	0.0813	0.1070	0.0637	0.1240	0.0908	0.1061	0.1312	0.0786	0.0916	0.1082	0.1286	0.0869
1991	0.1038	0.1021	0.0824	0.0648	0.0800	0.0873	0.0966	0.0686	0.1314	0.0979	0.0956	0.1421	0.0815	0.0895	0.1086	0.1287	0.0855
1992	0.1083	0.1052	0.0850	0.0788	0.0821	0.0953	0.1034	0.0769	0.1392	0.1000	0.0923	0.1377	0.0806	0.0954	0.1122	0.1293	0.0840
1993	0.1053	0.1078	0.0848	0.0915	0.0730	0.0988	0.1119	0.0817	0.1391	0.0984	0.0860	0.1309	0.0775	0.0992	0.1161	0.1357	0.0866
1994	0.1051	0.1126	0.0866	0.1014	0.0811	0.0978	0.1131	0.0854	0.1424	0.0998	0.1038	0.1380	0.0870	0.1092	0.1289	0.1442	0.0960
1995	0.1081	0.1163	0.0879	0.1076	0.0985	0.0998	0.1202	0.0914	0.1468	0.1014	0.1264	0.1415	0.1023	0.1214	0.1384	0.1543	0.0987
1996	0.1073	0.1203	0.0924	0.1162	0.0938	0.0991	0.1243	0.0963	0.1536	0.0988	0.1338	0.0957	0.1083	0.1273	0.1353	0.1542	0.1018
1997	0.1095	0.1197	0.0929	0.1147	0.0865	0.0995	0.1206	0.0966	0.1489	0.0989	0.1386	0.1021	0.1075	0.1269	0.1283	0.1583	0.1091
1998	0.1101	0.1169	0.0905	0.1137	0.0853	0.0978	0.1150	0.0900	0.1383	0.0917	0.1227	0.1013	0.1031	0.1265	0.1225	0.1672	0.1066
1999	0.1122	0.1156	0.0905	0.1210	0.0839	0.0930	0.1135	0.0938	0.1355	0.0929	0.1107	0.1008	0.1027	0.1265	0.1271	0.1882	0.1139
2000	0.1146	0.1173	0.0939	0.1202	0.0883	0.0940	0.1144	0.1030	0.1316	0.0981	0.1087	0.1148	0.1072	0.1277	0.1310	0.1845	0.1167
2001	0.1106	0.1174	0.0968	0.1180	0.0949	0.1010	0.1202	0.1060	0.1301	0.0965	0.1150	0.1198	0.0919	0.1303	0.1239	0.1693	0.1062
2002	0.1062	0.1177	0.0967	0.1227	0.0929	0.1044	0.1227	0.1050	0.1294	0.0937	0.1124	0.1155	0.0976	0.1357	0.1228	0.1895	0.1047
2003	0.1055	0.1162	0.0945	0.1223	0.0939	0.1031	0.1202	0.1032	0.1193	0.0967	0.1078	0.1154	0.1045	0.1320	0.1231	0.1940	0.1051
2004	0.1040	0.1172	0.0935	0.1223	0.0924	0.1009	0.1067	0.1029	0.1035	0.0986	0.1036	0.1219	0.1026	0.1269	0.1211	0.1646	0.1049
2005	0.1060	0.1202	0.1201	0.1229	0.0947	0.1011	0.1015	0.1060	0.0935	0.1028	0.1017	0.1175	0.1042	0.1261	0.1172	0.1537	0.1096
2006	0.1157	0.1223	0.1222	0.1015	0.0977	0.1031	0.0991	0.1091	0.0967	0.1031	0.1001	0.1194	0.1074	0.1274	0.1138	0.1564	0.1193
2007	0.1202	0.1249	0.1272	0.1066	0.1012	0.1023	0.0959	0.1150	0.0981	0.1073	0.0977	0.1183	0.1105	0.1299	0.1135	0.1540	0.1227
2008	0.1248	0.1298	0.1468	0.1127	0.1065	0.1047	0.0950	0.1174	0.1001	0.1126	0.1025	0.1103	0.1107	0.1332	0.1136	0.1458	0.1219
2009	0.1320	0.1334	0.1445	0.1043	0.1110	0.1122	0.1018	0.1189	0.0956	0.1121	0.1066	0.1116	0.1140	0.1300	0.1110	0.1507	0.1270
2010	0.1397	0.1374	0.1406	0.1099	0.1102	0.1151	0.1210	0.1217	0.0938	0.1141	0.1087	0.1167	0.1191	0.1411	0.1232	0.1722	0.1316
2011	0.1493	0.1402	0.1377	0.1323	0.1053	0.1160	0.1381	0.1380	0.0867	0.1169	0.1233	0.1207	0.1197	0.1276	0.1156	0.1514	0.1330

Table 2. Continued

Year	Belgium	Denmark	Germany	Greece	Spain	France	Ireland	Italy	Luxem-burg	NL	Portugal	Finland	Sweden	UK	Australia	Canada	US
Non-residential structures:																	
1973	0.0157	0.0077	0.0137	0.0007	0.0015	0.0097	0.0024	0.0029	0.0081	0.0099	0.0010	0.0051	0.0051	0.0105	0.0043	0.0127	0.0106
1974	0.0172	0.0084	0.0156	0.0008	0.0019	0.0110	0.0037	0.0038	0.0079	0.0109	0.0012	0.0067	0.0056	0.0138	0.0049	0.0142	0.0108
1975	0.0195	0.0093	0.0151	0.0009	0.0020	0.0131	0.0048	0.0042	0.0089	0.0115	0.0012	0.0077	0.0068	0.0194	0.0057	0.0148	0.0101
1976	0.0191	0.0087	0.0133	0.0008	0.0023	0.0137	0.0055	0.0047	0.0098	0.0124	0.0011	0.0095	0.0070	0.0193	0.0067	0.0155	0.0105
1977	0.0190	0.0088	0.0122	0.0008	0.0027	0.0139	0.0049	0.0049	0.0120	0.0135	0.0015	0.0119	0.0071	0.0145	0.0074	0.0143	0.0147
1978	0.0188	0.0104	0.0119	0.0010	0.0038	0.0141	0.0045	0.0048	0.0118	0.0143	0.0025	0.0145	0.0074	0.0127	0.0081	0.0179	0.0147
1979	0.0200	0.0136	0.0143	0.0012	0.0041	0.0136	0.0044	0.0052	0.0124	0.0151	0.0026	0.0171	0.0078	0.0140	0.0087	0.0212	0.0175
1980	0.0259	0.0191	0.0194	0.0015	0.0062	0.0148	0.0044	0.0066	0.0134	0.0171	0.0032	0.0235	0.0095	0.0169	0.0095	0.0283	0.0217
1981	0.0345	0.0272	0.0266	0.0023	0.0065	0.0197	0.0058	0.0073	0.0148	0.0211	0.0042	0.0316	0.0133	0.0217	0.0118	0.0374	0.0310
1982	0.0429	0.0365	0.0306	0.0030	0.0076	0.0254	0.0068	0.0090	0.0188	0.0244	0.0070	0.0345	0.0147	0.0234	0.0157	0.0367	0.0305
1983	0.0433	0.0392	0.0304	0.0035	0.0106	0.0300	0.0068	0.0100	0.0194	0.0249	0.0135	0.0334	0.0163	0.0226	0.0160	0.0322	0.0343
1984	0.0463	0.0365	0.0302	0.0040	0.0116	0.0300	0.0077	0.0107	0.0208	0.0239	0.0176	0.0354	0.0182	0.0251	0.0169	0.0440	0.0377
1985	0.0476	0.0311	0.0326	0.0041	0.0089	0.0279	0.0081	0.0113	0.0221	0.0257	0.0143	0.0369	0.0193	0.0299	0.0229	0.0446	0.0348
1986	0.0452	0.0288	0.0329	0.0049	0.0106	0.0238	0.0077	0.0123	0.0229	0.0292	0.0192	0.0370	0.0185	0.0291	0.0304	0.0424	0.0278
1987	0.0440	0.0346	0.0327	0.0064	0.0129	0.0234	0.0077	0.0136	0.0249	0.0315	0.0240	0.0397	0.0185	0.0337	0.0351	0.0485	0.0323
1988	0.0454	0.0404	0.0358	0.0077	0.0147	0.0238	0.0089	0.0145	0.0260	0.0357	0.0220	0.0440	0.0203	0.0334	0.0352	0.0482	0.0329
1989	0.0502	0.0457	0.0400	0.0098	0.0186	0.0262	0.0110	0.0194	0.0294	0.0402	0.0294	0.0494	0.0248	0.0347	0.0380	0.0512	0.0335
1990	0.0522	0.0484	0.0462	0.0122	0.0241	0.0301	0.0124	0.0222	0.0349	0.0462	0.0271	0.0551	0.0318	0.0412	0.0415	0.0574	0.0339
1991	0.0552	0.0472	0.0525	0.0173	0.0223	0.0350	0.0134	0.0232	0.0377	0.0515	0.0258	0.0597	0.0314	0.0351	0.0412	0.0568	0.0310
1992	0.0579	0.0489	0.0540	0.0205	0.0238	0.0399	0.0165	0.0277	0.0403	0.0520	0.0202	0.0543	0.0289	0.0352	0.0409	0.0548	0.0279
1993	0.0537	0.0509	0.0501	0.0244	0.0161	0.0421	0.0177	0.0303	0.0388	0.0478	0.0189	0.0467	0.0247	0.0325	0.0384	0.0572	0.0277
1994	0.0513	0.0547	0.0479	0.0272	0.0199	0.0427	0.0163	0.0321	0.0392	0.0482	0.0309	0.0459	0.0289	0.0356	0.0426	0.0617	0.0341
1995	0.0530	0.0592	0.0488	0.0277	0.0312	0.0435	0.0190	0.0370	0.0407	0.0481	0.0362	0.0496	0.0407	0.0442	0.0485	0.0657	0.0355
1996	0.0518	0.0627	0.0521	0.0272	0.0248	0.0449	0.0192	0.0385	0.0411	0.0464	0.0449	0.0348	0.0402	0.0498	0.0480	0.0577	0.0363
1997	0.0530	0.0613	0.0526	0.0222	0.0187	0.0447	0.0192	0.0338	0.0383	0.0452	0.0447	0.0423	0.0370	0.0481	0.0449	0.0577	0.0407
1998	0.0523	0.0569	0.0500	0.0212	0.0159	0.0435	0.0187	0.0228	0.0369	0.0386	0.0326	0.0381	0.0319	0.0442	0.0420	0.0613	0.0379
1999	0.0532	0.0542	0.0482	0.0221	0.0149	0.0417	0.0184	0.0216	0.0385	0.0389	0.0246	0.0324	0.0307	0.0427	0.0448	0.0690	0.0439
2000	0.0542	0.0557	0.0515	0.0212	0.0178	0.0426	0.0193	0.0256	0.0425	0.0440	0.0255	0.0417	0.0339	0.0441	0.0481	0.0660	0.0466
2001	0.0542	0.0540	0.0553	0.0194	0.0215	0.0458	0.0205	0.0268	0.0436	0.0430	0.0276	0.0407	0.0398	0.0486	0.0417	0.0514	0.0375
2002	0.0535	0.0535	0.0525	0.0213	0.0199	0.0484	0.0211	0.0243	0.0460	0.0411	0.0285	0.0388	0.0441	0.0503	0.0388	0.0599	0.0362
2003	0.0515	0.0514	0.0475	0.0210	0.0208	0.0475	0.0217	0.0214	0.0426	0.0399	0.0275	0.0409	0.0472	0.0453	0.0394	0.0599	0.0357
2004	0.0500	0.0508	0.0449	0.0213	0.0194	0.0460	0.0221	0.0218	0.0382	0.0422	0.0290	0.0493	0.0420	0.0459	0.0422	0.0512	0.0345
2005	0.0467	0.0488	0.0419	0.0238	0.0207	0.0466	0.0233	0.0242	0.0363	0.0459	0.0290	0.0471	0.0388	0.0457	0.0447	0.0422	0.0371
2006	0.0470	0.0466	0.0434	0.0261	0.0224	0.0457	0.0237	0.0275	0.0395	0.0457	0.0300	0.0499	0.0376	0.0440	0.0450	0.0547	0.0437
2007	0.0527	0.0484	0.0475	0.0305	0.0248	0.0476	0.0244	0.0322	0.0459	0.0498	0.0309	0.0556	0.0405	0.0456	0.0472	0.0618	0.0465
2008	0.0578	0.0530	0.0492	0.0357	0.0287	0.0493	0.0289	0.0338	0.0507	0.0544	0.0375	0.0530	0.0395	0.0476	0.0506	0.0532	0.0444
2009	0.0610	0.0521	0.0468	0.0264	0.0326	0.0527	0.0383	0.0335	0.0536	0.0535	0.0462	0.0504	0.0373	0.0423	0.0483	0.0605	0.0438
2010	0.0645	0.0517	0.0430	0.0340	0.0331	0.0525	0.0503	0.0354	0.0503	0.0567	0.0571	0.0465	0.0345	0.0445	0.0593	0.0681	0.0434
2011	0.0698	0.0476	0.0402	0.0600	0.0271	0.0527	0.0644	0.0549	0.0459	0.0598	0.0824	0.0522	0.0353	0.0343	0.0500	0.0545	0.0419

Table 2. Continued

Year	Belgium	Denmark	Germany	Greece	Spain'	France	Ireland	Italy	Luxem-burg	NL	Portugal	Finland	Sweden	UK	Australia	Canada	US
Land																	
1973	0.0024	0.0017	0.0090	0.0053	0.0016	0.0103	0.0017	0.0022	0.0013	0.0004	0.0002	0.0013	0.0027	0.0063	0.0004	0.0019	0.0042
1974	0.0039	0.0024	0.0111	0.0048	0.0022	0.0126	0.0037	0.0032	0.0008	0.0014	0.0003	0.0030	0.0027	0.0073	0.0007	0.0024	0.0041
1975	0.0043	0.0020	0.0089	0.0043	0.0012	0.0144	0.0054	0.0026	0.0003	0.0013	0.0002	0.0014	0.0032	0.0070	0.0005	0.0020	0.0019
1976	0.0046	0.0008	0.0053	0.0018	0.0013	0.0143	0.0066	0.0024	0.0002	0.0008	0.0002	0.0026	0.0028	0.0067	0.0002	0.0020	0.0012
1977	0.0039	0.0003	0.0030	0.0014	0.0012	0.0125	0.0061	0.0022	0.0005	0.0004	0.0003	0.0050	0.0021	0.0035	0.0001	0.0008	0.0077
1978	0.0025	0.0016	0.0016	0.0014	0.0022	0.0099	0.0039	0.0012	0.0007	0.0003	0.0003	0.0090	0.0015	0.0010	0.0001	0.0023	0.0069
1979	0.0041	0.0043	0.0064	0.0020	0.0016	0.0070	0.0032	0.0006	0.0007	0.0005	0.0001	0.0130	0.0012	0.0011	0.0001	0.0045	0.0106
1980	0.0124	0.0080	0.0177	0.0046	0.0036	0.0070	0.0019	0.0031	0.0008	0.0022	0.0002	0.0194	0.0026	0.0010	0.0001	0.0116	0.0155
1981	0.0230	0.0104	0.0351	0.0086	0.0024	0.0124	0.0027	0.0051	0.0011	0.0049	0.0003	0.0211	0.0048	0.0005	0.0012	0.0239	0.0265
1982	0.0285	0.0122	0.0399	0.0104	0.0030	0.0187	0.0028	0.0055	0.0028	0.0063	0.0009	0.0220	0.0053	0.0005	0.0036	0.0189	0.0223
1983	0.0259	0.0117	0.0388	0.0098	0.0058	0.0204	0.0018	0.0051	0.0020	0.0065	0.0021	0.0220	0.0058	0.0007	0.0023	0.0098	0.0241
1984	0.0261	0.0101	0.0379	0.0081	0.0060	0.0174	0.0021	0.0044	0.0021	0.0057	0.0027	0.0272	0.0054	0.0033	0.0020	0.0185	0.0255
1985	0.0259	0.0084	0.0395	0.0059	0.0021	0.0117	0.0020	0.0036	0.0024	0.0068	0.0016	0.0283	0.0058	0.0069	0.0056	0.0173	0.0192
1987	0.0209	0.0109	0.0350	0.0071	0.0063	0.0034	0.0010	0.0046	0.0031	0.0143	0.0027	0.0345	0.0028	0.0079	0.0107	0.0154	0.0126
1988	0.0225	0.0122	0.0371	0.0104	0.0087	0.0034	0.0019	0.0051	0.0041	0.0205	0.0026	0.0401	0.0032	0.0078	0.0136	0.0141	0.0120
1989	0.0272	0.0141	0.0413	0.0145	0.0127	0.0058	0.0030	0.0113	0.0074	0.0247	0.0034	0.0459	0.0051	0.0090	0.0165	0.0170	0.0118
1990	0.0288	0.0156	0.0492	0.0172	0.0172	0.0106	0.0042	0.0143	0.0169	0.0297	0.0029	0.0532	0.0087	0.0112	0.0153	0.0219	0.0120
1991	0.0307	0.0149	0.0572	0.0237	0.0128	0.0160	0.0048	0.0145	0.0185	0.0339	0.0026	0.0447	0.0072	0.0037	0.0128	0.0203	0.0092
1992	0.0310	0.0142	0.0582	0.0246	0.0115	0.0198	0.0069	0.0179	0.0245	0.0330	0.0019	0.0273	0.0044	0.0041	0.0131	0.0188	0.0061
1993	0.0266	0.0135	0.0459	0.0283	0.0040	0.0203	0.0076	0.0201	0.0180	0.0278	0.0015	0.0202	0.0019	0.0048	0.0122	0.0196	0.0060
1994	0.0230	0.0164	0.0386	0.0293	0.0071	0.0202	0.0064	0.0213	0.0122	0.0237	0.0043	0.0198	0.0043	0.0095	0.0160	0.0217	0.0120
1995	0.0244	0.0204	0.0391	0.0271	0.0167	0.0210	0.0087	0.0266	0.0140	0.0257	0.0086	0.0204	0.0103	0.0200	0.0206	0.0237	0.0124
1996	0.0233	0.0226	0.0384	0.0226	0.0111	0.0224	0.0093	0.0269	0.0139	0.0248	0.0129	0.0120	0.0102	0.0249	0.0188	0.0183	0.0126
1997	0.0246	0.0231	0.0395	0.0127	0.0057	0.0230	0.0098	0.0216	0.0113	0.0238	0.0154	0.0182	0.0092	0.0201	0.0164	0.0194	0.0168
1998	0.0243	0.0239	0.0391	0.0092	0.0023	0.0218	0.0087	0.0076	0.0095	0.0164	0.0124	0.0148	0.0068	0.0169	0.0142	0.0228	0.0132
1999	0.0270	0.0220	0.0377	0.0090	0.0007	0.0193	0.0072	0.0067	0.0148	0.0202	0.0077	0.0103	0.0062	0.0151	0.0151	0.0330	0.0186
2000	0.0281	0.0227	0.0413	0.0067	0.0040	0.0206	0.0066	0.0120	0.0231	0.0307	0.0097	0.0210	0.0093	0.0162	0.0173	0.0271	0.0208
2001	0.0275	0.0269	0.0460	0.0019	0.0071	0.0237	0.0056	0.0129	0.0233	0.0256	0.0119	0.0193	0.0150	0.0206	0.0123	0.0136	0.0100
2002	0.0262	0.0265	0.0444	0.0044	0.0042	0.0251	0.0040	0.0091	0.0263	0.0197	0.0124	0.0177	0.0170	0.0232	0.0106	0.0248	0.0073
2003	0.0235	0.0252	0.0374	0.0029	0.0042	0.0235	0.0040	0.0037	0.0190	0.0118	0.0102	0.0205	0.0197	0.0158	0.0128	0.0243	0.0063
2004	0.0232	0.0272	0.0331	0.0023	0.0008	0.0200	0.0043	0.0035	0.0106	0.0129	0.0118	0.0315	0.0162	0.0162	0.0170	0.0105	0.0038
2005	0.0198	0.0296	0.0293	0.0050	0.0013	0.0188	0.0046	0.0057	0.0049	0.0174	0.0122	0.0288	0.0177	0.0169	0.0185	0.0030	0.0054
2006	0.0182	0.0283	0.0299	0.0067	0.0019	0.0161	0.0041	0.0089	0.0085	0.0164	0.0139	0.0319	0.0165	0.0163	0.0163	0.0102	0.0121
2007	0.0195	0.0305	0.0335	0.0111	0.0035	0.0153	0.0033	0.0139	0.0175	0.0224	0.0154	0.0374	0.0199	0.0217	0.0162	0.0165	0.0129
2008	0.0217	0.0345	0.0351	0.0162	0.0080	0.0159	0.0082	0.0145	0.0225	0.0331	0.0275	0.0339	0.0154	0.0271	0.0167	0.0066	0.0063
2009	0.0219	0.0311	0.0336	0.0041	0.0119	0.0146	0.0143	0.0126	0.0260	0.0312	0.0434	0.0252	0.0093	0.0130	0.0117	0.0099	0.0033
2010	0.0223	0.0278	0.0310	0.0102	0.0133	0.0155	0.0239	0.0142	0.0197	0.0337	0.0701	0.0258	0.0051	0.0190	0.0256	0.0289	0.0040
2011	0.0245	0.0182	0.0303	0.0343	0.0055	0.0158	0.0367	0.0348	0.0132	0.0370	0.1296	0.0337	0.0053	0.0094	0.0183	0.0100	0.0037

Table 3. Price Indexes of Capital Input, 1973-2011

Year	Belgium	Denmark	Germany	Greece	Spain'	France	Ireland	Italy	Luxem-burg	NL	Portugal	Finland	Sweden	UK	Australia	Canada	US
1973	0.2563	0.1187	0.3184	0.0990	0.2266	0.3217	0.2117	0.1474	0.2673	0.1987	0.0253	0.1190	0.1544	0.2729	0.1141	0.3587	0.3982
1974	0.3114	0.1420	0.3661	0.0954	0.3001	0.3783	0.3896	0.2005	0.2556	0.2433	0.0312	0.1542	0.1635	0.3227	0.1270	0.3903	0.3957
1975	0.3499	0.1445	0.3409	0.0940	0.2209	0.4449	0.5371	0.1975	0.2749	0.2504	0.0297	0.1640	0.1900	0.3489	0.1366	0.4008	0.3180
1976	0.3605	0.1204	0.2893	0.0615	0.2374	0.4529	0.6539	0.2051	0.3075	0.2545	0.0285	0.2106	0.1997	0.3549	0.1500	0.4327	0.3198
1977	0.3485	0.1135	0.2565	0.0618	0.2422	0.4282	0.6115	0.2107	0.3819	0.2647	0.0375	0.2667	0.2079	0.2486	0.1641	0.3962	0.6382
1978	0.3213	0.1548	0.2406	0.0688	0.3793	0.3967	0.4619	0.1824	0.3722	0.2783	0.0554	0.3388	0.2187	0.1768	0.1790	0.4877	0.6261
1979	0.3732	0.2323	0.3268	0.0860	0.3452	0.3503	0.4259	0.1820	0.3928	0.2935	0.0599	0.4175	0.2337	0.2006	0.1944	0.6160	0.8068
1982	1.0881	0.5471	0.8837	0.2579	0.6075	0.6827	0.4698	0.4291	0.5952	0.5085	0.1561	0.7147	0.3952	0.2581	0.3671	1.2752	1.4567
1983	1.0419	0.5676	0.8759	0.2746	0.9245	0.7692	0.4323	0.4489	0.6090	0.5290	0.2698	0.7135	0.4308	0.2680	0.3516	1.0144	1.5944
1984	1.0767	0.5328	0.8707	0.2814	0.9985	0.7452	0.4792	0.4551	0.6497	0.5120	0.3690	0.7993	0.4698	0.3733	0.3633	1.3641	1.7026
1985	1.0899	0.4724	0.9137	0.2736	0.6433	0.6500	0.4934	0.4564	0.6925	0.5562	0.3246	0.8666	0.4945	0.5047	0.4911	1.3634	1.4510
1986	0.9969	0.4545	0.8972	0.3154	0.8734	0.5530	0.4460	0.4892	0.7027	0.6592	0.4253	0.8545	0.4790	0.4577	0.6228	1.2560	1.0227
1987	0.9633	0.5468	0.8675	0.4009	1.1298	0.5019	0.4326	0.5477	0.7860	0.7423	0.5434	0.9205	0.4875	0.5706	0.7376	1.3834	1.1822
1988	1.0110	0.6136	0.9190	0.4905	1.3751	0.5152	0.5143	0.5875	0.8395	0.8779	0.5443	1.0159	0.5187	0.5754	0.8110	1.3363	1.1610
1989	1.1530	0.6889	1.0050	0.6194	1.7904	0.5855	0.6491	0.8624	0.9952	0.9877	0.6665	1.1232	0.5931	0.6207	0.8863	1.4546	1.1666
1990	1.2094	0.7342	1.1537	0.7501	2.2864	0.7059	0.7706	1.0101	1.3415	1.1300	0.6619	1.2446	0.7014	0.7290	0.8920	1.6756	1.1947
1991	1.2775	0.7186	1.3041	1.0212	1.9015	0.8377	0.8032	1.0517	1.4462	1.2548	0.6333	1.2754	0.7026	0.4880	0.8493	1.6276	1.0525
1992	1.3103	0.7216	1.3319	1.1683	1.8393	0.9533	1.0059	1.2479	1.6509	1.2542	0.5451	1.1040	0.6592	0.5146	0.8669	1.5603	0.9008
1993	1.1846	0.7264	1.1560	1.3564	1.0468	0.9875	1.0856	1.3667	1.4800	1.1481	0.4882	0.9657	0.5968	0.5310	0.8562	1.6271	0.9107
1994	1.0931	0.8006	1.0591	1.4706	1.4168	0.9845	0.9887	1.4397	1.3663	1.0968	0.6941	0.9754	0.6991	0.7041	0.9914	1.7600	1.2606
1995	1.1431	0.8961	1.0750	1.4462	2.5128	1.0104	1.1944	1.6851	1.4460	1.1338	0.9921	1.0289	0.9095	1.0663	1.1358	1.8964	1.3040
1996	1.1104	0.9591	1.0979	1.3920	1.8967	1.0369	1.2445	1.7374	1.4742	1.0994	1.2336	0.7023	0.9413	1.2410	1.0912	1.6660	1.3302
1997	1.1541	0.9602	1.1173	1.1282	1.2827	1.0462	1.2602	1.5284	1.3574	1.0768	1.3345	0.8375	0.9098	1.1031	1.0080	1.7289	1.5826
1998	1.1472	0.9438	1.0899	1.0399	0.9350	1.0123	1.1717	0.9587	1.2697	0.8934	1.0819	0.7677	0.8318	0.9956	0.9336	1.9080	1.3845
1999	1.2231	0.8968	1.0626	1.0630	0.7646	0.9437	1.0834	0.9340	1.4136	0.9580	0.8192	0.6728	0.8163	0.9397	0.9805	2.4038	1.6914
2000	1.2619	0.9192	1.1376	1.0121	1.1592	0.9722	1.0669	1.1761	1.6670	1.1693	0.8891	0.8789	0.8952	0.9792	1.0494	2.1572	1.8229
2001	1.2361	0.9778	1.2299	0.8771	1.5279	1.0642	1.0430	1.2308	1.6912	1.0801	0.9982	0.8686	0.9040	1.1302	0.9080	1.5349	1.2260
2002	1.1869	0.9695	1.1938	0.9691	1.2394	1.1120	0.9667	1.0906	1.8026	0.9698	1.0173	0.8286	0.9820	1.2246	0.8611	2.0705	1.0818
2003	1.1101	0.9361	1.0690	0.9358	1.2706	1.0788	0.9726	0.8970	1.5327	0.8566	0.9393	0.8699	1.0673	0.9787	0.9027	2.0630	1.0277
2004	1.0912	0.9656	0.9950	0.9287	0.9199	1.0114	0.9723	0.8944	1.2070	0.8938	0.9904	1.0515	0.9911	0.9836	0.9776	1.3889	0.9033
2005	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
2006	0.9924	0.9741	1.0232	0.9820	1.0930	0.9678	0.9722	1.1374	1.1470	0.9849	1.0641	1.0562	0.9991	0.9777	0.9554	1.3513	1.3582
2007	1.0607	1.0222	1.1089	1.1166	1.2795	0.9647	0.9309	1.3491	1.4686	1.1169	1.1190	1.1566	1.0686	1.1479	0.9657	1.6109	1.4102
2008	1.1498	1.1234	1.1923	1.2681	1.7187	0.9943	1.2968	1.3985	1.6650	1.3254	1.5838	1.0859	1.0175	1.3226	0.9935	1.1635	1.1146
2009	1.1907	1.0763	1.1518	0.9587	2.0988	1.0312	1.8314	1.3563	1.7766	1.2898	2.1912	1.0074	0.9622	0.8869	0.9005	1.3377	1.0020
2010	1.2408	1.0355	1.0840	1.1603	2.2143	1.0577	2.6459	1.4334	1.5712	1.3585	3.1663	0.9831	0.9336	1.0919	1.2024	2.1394	1.0522
2011	1.3431	0.8761	1.0519	1.8608	1.5029	1.0676	3.6813	2.2654	1.3265	1.4393	5.3605	1.1046	0.9437	0.7453	1.0189	1.3216	1.0352

Table 4. Capital Input (Millions of 2005 national currencies)

Year	Belgium	Denmark	Germany	Greece	Spain	France	Ireland	Italy	Luxem-	NL	Portugal	Finland	Sweden	UK	Australia	Canada	US

									burg								
1973	934	17285	16905	1824	2999	9632	1026	8852	81	2153	738	1789	12513	4262	10298	3591	33147
1975	1017	19334	17097	1857	3027	10145	1041	8967	84	2464	847	1811	12322	4403	10904	4048	35055
1976	1023	20409	17161	1920	3047	10340	1046	9061	85	2553	914	1832	12464	4407	11211	4374	35782
1977	1037	21792	17302	1977	3075	10541	1068	9228	85	2659	963	1852	12659	4360	11596	4782	35424
1978	1062	22469	17584	2032	3109	10699	1091	9432	83	2855	1018	1865	12663	4468	11932	5057	35942
1979	1099	23367	17486	2048	3161	10928	1124	9690	84	3093	1054	1872	12552	4514	12299	5309	36580
1980	1108	24115	17600	2119	3222	11154	1160	9697	84	3306	1095	1886	12445	4540	12777	5559	37144
1981	1102	24242	17625	2180	3300	11317	1186	9805	84	3411	1132	1913	12165	4499	12851	5668	37027
1982	1093	24095	17539	2201	3351	11438	1221	9839	83	3485	1159	1937	11927	4480	13112	5698	36651
1983	1089	23893	17453	2225	3387	11571	1236	9857	84	3560	1158	1974	11764	4509	13320	5642	35894
1985	1073	23859	17380	2219	3466	11702	1234	9851	84	3721	1145	2025	11573	4565	13764	5413	34360
1986	1064	24064	17317	2232	3466	11726	1226	9848	83	3764	1128	2038	11379	4595	13895	5217	33169
1987	1061	24241	17228	2149	3482	11686	1218	9844	81	3773	1124	2028	11111	4570	13933	5005	31857
1988	1058	24228	17133	2044	3491	11628	1204	9847	80	3800	1139	2038	10884	4545	13968	4798	30955
1989	1053	24064	17081	1961	3471	11628	1198	9882	80	3820	1203	2046	10746	4507	14080	4596	30170
1990	1047	24147	18235	1903	3436	11697	1206	9905	79	3857	1249	2021	10685	4489	14200	4421	29579
1991	1043	24125	18098	1834	3371	11724	1213	9892	80	3891	1233	2065	10539	4483	14222	4245	29110
1992	1031	23967	18095	1773	3332	11700	1212	9861	81	3923	1214	2049	10250	4424	14171	4098	28492
1993	1035	23332	18137	1724	3246	11614	1207	9807	81	3959	1200	1978	9923	4384	14134	3968	27798
1994	1025	22580	18042	1657	3150	11496	1202	9715	80	3930	1164	1921	9595	4393	14058	3918	27254
1995	1008	22607	17888	1602	3080	11428	1210	9654	80	3895	1140	1881	9412	4411	14024	3867	26863
1996	995	22715	17732	1563	3034	11422	1214	9591	79	3877	1116	1834	9256	4445	14098	3837	26467
1998	982	23056	17508	1519	3034	11553	1234	9534	77	3843	1093	1823	9020	4441	14307	3838	26088
1999	979	22813	17296	1519	3076	11677	1239	9521	77	3839	1082	1824	8909	4377	14530	3889	26014
2000	978	22796	17210	1539	2952	11813	1239	9512	75	3859	1085	1835	8866	4276	14714	3878	25845
2001	976	22977	17161	1573	2949	11901	1236	9535	74	3868	1087	1839	8979	4247	14850	3870	25710
2002	978	23177	17052	1579	2949	11959	1230	9543	73	3908	1089	1845	9069	4215	14963	3835	25718
2003	983	23201	17044	1611	2961	11994	1226	9640	72	3899	1089	1859	9210	4174	15112	3827	25759
2004	986	23339	16946	1662	3078	12044	1219	9723	73	3908	1088	1878	9300	4154	15343	3819	26048
2005	989	23648	16852	1695	3129	12122	1219	9863	75	3903	1091	1874	9390	4157	15528	3855	26590
2006	995	23814	16633	1752	3128	12178	1216	9928	75	3889	1087	1897	9410	4179	15759	3803	26714
2007	1009	23837	16543	1787	3153	12243	1223	9975	76	3900	1082	1893	9456	4161	16015	3757	26552
2008	1039	24311	16509	1855	3186	12384	1268	9977	75	3971	1080	1882	9597	4190	16177	3813	26695
2009	1043	24355	16610	1958	3219	12576	1296	1008	76	4040	1078	1881	9793	4201	16500	3855	27290
2010	1071	24265	16457	1972	3254	12607	1280	10046	77	4035	1074	1909	9864	4238	16892	3887	27217
2011	1093	24094	16366	1947	3277	12525	1267	9989	78	4047	1071	1885	9908	4284	17305	3966	27286

Table 5. Definition of Variables in Hedonic Regression

Variable	Unit	Definition
Land price	Local currency per hectare	Price of agricultural land
Land area	Hectares	Total agricultural land area

Population accessibility	Index	A measure of the size and proximity of nearby population centers
Irrigation	Percent of total land area	Irrigated
Aluminum toxicity	"	Soils with aluminum toxicity
Calcareous	"	Soils with calcareous reactions
Sulfidic	"	Sulfidic soils
Moisture stress	"	Experiencing continuous soil moisture stress
Aridic torric	"	Aridic or torric soil moisture regime too dry to grow a crop without irrigation
Leaching	"	High leaching potential
Waterlogging	"	Soils experiencing waterlogging
High phosphorus	"	High phosphorus fixation
Alkalinity	"	Soil alkalinity
Salinity	"	Soil salinity
Cryic frigid	"	Cryic and frigid (<8jC mean annual), non-iso soil temperature regimes, where management practices can help warm topsoils for short-term cereal production
Permafrost	"	Permafrost with 50cm gelisols; no cropping possingle
Cracking clays	"	Cracking clays
Volcanic	"	Volcanic soils
Organic content	"	Organic soil: >12% organic C to a depth of 50 cm or more (histosols and histic groups)
Clayey topsoil	"	Clayey topsoil: >35%
Loamy topsoil	"	Loamy topsoil <35% clay
Clayey subsoil	"	Clayey subsoil
Loamy subsoil	"	Loamy subsoil
Rock	"	Rock or other hard root-restricting layer within 50 cm
Sandy topsoil	"	Sandy topsoil
Sandy subsoil	"	Sandy subsoil

Source: Sanchez et al. (2003).

Table 6. Regression of Land Prices on Characteristics

Variable	Coefficient	t-value	Variable	Coefficient	t-value
D1 (US)	9.195822***	44.40	Clayey subsoil	-0.060802	-1.38
D2 (Canada)	9.348605***	53.62	Loamy subsoil	-0.058496*	-1.70

D3 (Australia)	9.548082***	28.47	Irrigation	0.041628***	3.29
D4 (France)	10.569881***	46.08	Moisture stress	-2.201086***	-3.90
D5 (Finland)	10.171642***	8.26	Irrigation*moisture stress	0.054064***	4.95
D6 (UK)	9.089270***	9.86	Population accessibility	0.378844***	31.02
D7 (Ireland)	10.020440***	5.26	Aluminum toxicity	0.192783***	8.75
D8 (Belgium)	10.454521***	6.79	Calcareous soils	0.347702***	2.64
D9 (Denmark)	12.714246***	8.70	Salinity	-0.037292	-0.37
D10 (Lux.)	10.126401**	2.04	Aridic torric	-0.811596***	-20.40
D11 (Netherlands)	10.536373***	7.12	Leaching	-1.022094***	-3.36
D12 (Germany)	9.654342***	10.75	Waterlogging	0.045393**	2.13
D13 (Italy)	9.535990***	17.45	High phosphorus	0.072319	0.60
D14 (Spain)	9.640408***	15.98	Alkalinity	0.011379	0.30
D15 (Greece)	9.456584*	1.93	Cryic frigid	0.031317	0.84
D16 (Portugal)	11.006552***	5.78	Permafrost	-0.039957	-0.41
D17 (Sweden)	10.105604***	5.65	Cracking clays	-0.042415	-0.85
Clayey topsoil	6.899976**	2.08	Volcanic soils	-0.022681	-1.36
Loamy topsoil	0.156524**	1.96	Organic content	-0.006592	-0.18
Sandy topsoil	0.002814***	2.71	Rock	0.018837	0.79
			λ-Clayey top	9.2342337**	2.39
Observations	3582		λ-Loamy top	0.010484	0.05
Log Likelihood	-2469		λ-Irrigation	1.375152***	6.91
AIC	5032		λ-Clayey sub	0.157727	0.48
Schwarz Criterion	5323		λ-Pop. accessibility	0.074652***	3.80
			λ-Moisture stress	4.542253***	4.10

Table 7. Purchasing Power Parities for Capital Input

Year	Belgium	Denmark	Germany	Greece	Spain'	France	Ireland	Italy	Luxem-burg	NL	Portugal	Finland	Sweden	UK	Australia	Canada	US
1973	0.5393	2.7827	0.5919	0.1027	0.1389	0.6390	0.2227	0.1305	0.2850	0.3958	0.0444	0.2414	1.4570	0.3072	0.2560	0.5156	0.3982
1975	0.7364	3.3898	0.6337	0.0975	0.1354	0.8835	0.5650	0.1749	0.2931	0.4989	0.0521	0.3328	1.7929	0.3927	0.3064	0.5762	0.3180
1976	0.7586	2.8233	0.5379	0.0638	0.1455	0.8994	0.6878	0.1817	0.3278	0.5069	0.0501	0.4272	1.8847	0.3994	0.3365	0.6220	0.3198
1977	0.7335	2.6613	0.4768	0.0640	0.1484	0.8505	0.6432	0.1866	0.4072	0.5273	0.0657	0.5411	1.9616	0.2798	0.3682	0.5696	0.6382
1978	0.6761	3.6311	0.4472	0.0713	0.2324	0.7879	0.4858	0.1615	0.3968	0.5545	0.0971	0.6874	2.0637	0.1990	0.4016	0.7010	0.6261
1979	0.7853	5.4481	0.6077	0.0891	0.2115	0.6958	0.4479	0.1611	0.4187	0.5847	0.1051	0.8469	2.2055	0.2257	0.4361	0.8855	0.8068
1980	1.2769	8.0200	0.9498	0.1392	0.3321	0.7394	0.3595	0.2602	0.4537	0.7015	0.1312	1.1168	2.6155	0.2533	0.4775	1.3066	1.0504
1981	1.9006	10.4622	1.4535	0.2132	0.3121	1.0133	0.4569	0.3248	0.5069	0.8871	0.1688	1.3652	3.4320	0.2728	0.6120	1.9675	1.5687
1982	2.2899	12.8318	1.6429	0.2674	0.3723	1.3558	0.4941	0.3800	0.6344	1.0132	0.2738	1.4498	3.7291	0.2905	0.8234	1.8329	1.4567
1983	2.1926	13.3106	1.6284	0.2847	0.5665	1.5276	0.4547	0.3975	0.6492	1.0539	0.4733	1.4474	4.0646	0.3016	0.7886	1.4581	1.5944
1984	2.2659	12.4957	1.6189	0.2917	0.6119	1.4800	0.5041	0.4031	0.6926	1.0199	0.6472	1.6214	4.4327	0.4201	0.8149	1.9607	1.7026
1985	2.2938	11.0792	1.6987	0.2836	0.3942	1.2910	0.5190	0.4042	0.7382	1.1080	0.5693	1.7580	4.6666	0.5680	1.1016	1.9597	1.4510
1986	2.0979	10.6588	1.6680	0.3270	0.5352	1.0983	0.4691	0.4332	0.7491	1.3133	0.7459	1.7333	4.5196	0.5151	1.3970	1.8054	1.0227
1987	2.0273	12.8225	1.6128	0.4156	0.6923	0.9969	0.4550	0.4850	0.8379	1.4788	0.9531	1.8673	4.5999	0.6422	1.6547	1.9886	1.1822
1988	2.1277	14.3896	1.7086	0.5085	0.8427	1.0233	0.5409	0.5203	0.8949	1.7490	0.9546	2.0609	4.8946	0.6476	1.8192	1.9208	1.1610
1989	2.4264	16.1573	1.8684	0.6421	1.0972	1.1628	0.6827	0.7638	1.0609	1.9677	1.1690	2.2785	5.5970	0.6985	1.9880	2.0908	1.1666
1990	2.5451	17.2194	2.1450	0.7776	1.4011	1.4020	0.8105	0.8946	1.4300	2.2513	1.1608	2.5247	6.6182	0.8204	2.0009	2.4085	1.1947
1991	2.6884	16.8536	2.4246	1.0585	1.1652	1.6638	0.8448	0.9314	1.5417	2.4999	1.1108	2.5872	6.6297	0.5492	1.9052	2.3395	1.0525
1992	2.7576	16.9232	2.4763	1.2111	1.1271	1.8934	1.0580	1.1052	1.7599	2.4986	0.9561	2.2395	6.2202	0.5792	1.9446	2.2427	0.9008
1993	2.4930	17.0366	2.1492	1.4060	0.6415	1.9612	1.1418	1.2104	1.5777	2.2873	0.8562	1.9589	5.6311	0.5976	1.9205	2.3388	0.9107
1994	2.3005	18.7763	1.9690	1.5245	0.8682	1.9554	1.0399	1.2750	1.4565	2.1851	1.2173	1.9786	6.5972	0.7924	2.2238	2.5298	1.2606
1995	2.4056	21.0165	1.9986	1.4992	1.5398	2.0068	1.2563	1.4923	1.5414	2.2588	1.7400	2.0873	8.5825	1.2001	2.5479	2.7258	1.3040
1996	2.3369	22.4933	2.0412	1.4430	1.1623	2.0593	1.3090	1.5387	1.5716	2.1902	2.1635	1.4246	8.8822	1.3966	2.4476	2.3947	1.3302
1997	2.4289	22.5180	2.0772	1.1695	0.7860	2.0779	1.3255	1.3536	1.4471	2.1452	2.3406	1.6989	8.5850	1.2415	2.2611	2.4851	1.5826
1998	2.4142	22.1332	2.0264	1.0779	0.5730	2.0104	1.2324	0.8491	1.3535	1.7798	1.8976	1.5573	7.8489	1.1204	2.0943	2.7425	1.3845
1999	2.5740	21.0310	1.9757	1.1019	0.4685	1.8742	1.1396	0.8272	1.5069	1.9086	1.4368	1.3647	7.7025	1.0576	2.1993	3.4552	1.6914
2000	2.6557	21.5567	2.1150	1.0491	0.7104	1.9309	1.1222	1.0416	1.7770	2.3296	1.5595	1.7828	8.4475	1.1020	2.3540	3.1007	1.8229
2001	2.6013	22.9307	2.2867	0.9092	0.9363	2.1135	1.0971	1.0901	1.8029	2.1518	1.7507	1.7620	8.5304	1.2719	2.0368	2.2063	1.2260
2002	2.4978	22.7378	2.2195	1.0045	0.7595	2.2086	1.0168	0.9659	1.9216	1.9321	1.7841	1.6808	9.2659	1.3782	1.9315	2.9762	1.0818
2003	2.3362	21.9544	1.9875	0.9701	0.7786	2.1427	1.0230	0.7945	1.6339	1.7066	1.6474	1.7647	10.0710	1.1015	2.0249	2.9654	1.0277
2004	2.2965	22.6451	1.8500	0.9627	0.5637	2.0087	1.0227	0.7921	1.2867	1.7806	1.7371	2.1330	9.3522	1.1070	2.1930	1.9964	0.9033
2005	2.1045	23.4522	1.8592	1.0366	0.6128	1.9861	1.0518	0.8856	1.0660	1.9923	1.7539	2.0285	9.4360	1.1254	2.2431	1.4374	1.0000
2006	2.0885	22.8447	1.9023	1.0179	0.6698	1.9221	1.0225	1.0073	1.2227	1.9621	1.8664	2.1426	9.4273	1.1003	2.1432	1.9424	1.3582
2007	2.2322	23.9739	2.0617	1.1575	0.7841	1.9159	0.9792	1.1948	1.5655	2.2252	1.9626	2.3461	10.0832	1.2919	2.1662	2.3155	1.4102
2008	2.4198	26.3470	2.2167	1.3146	1.0532	1.9747	1.3640	1.2386	1.7749	2.6405	2.7777	2.2029	9.6009	1.4885	2.2285	1.6724	1.1146
2009	2.5059	25.2407	2.1415	0.9938	1.2861	2.0480	1.9263	1.2012	1.8939	2.5696	3.8431	2.0435	9.0792	0.9982	2.0200	1.9228	1.0020
2010	2.6112	24.2843	2.0155	1.2028	1.3569	2.1007	2.7830	1.2695	1.6749	2.7065	5.5533	1.9943	8.8090	1.2288	2.6971	3.0751	1.0522
2011	2.8265	20.5472	1.9557	1.9289	0.9210	2.1204	3.8720	2.0063	1.4140	2.8675	9.4017	2.2408	8.9050	0.8388	2.2855	1.8997	1.0352

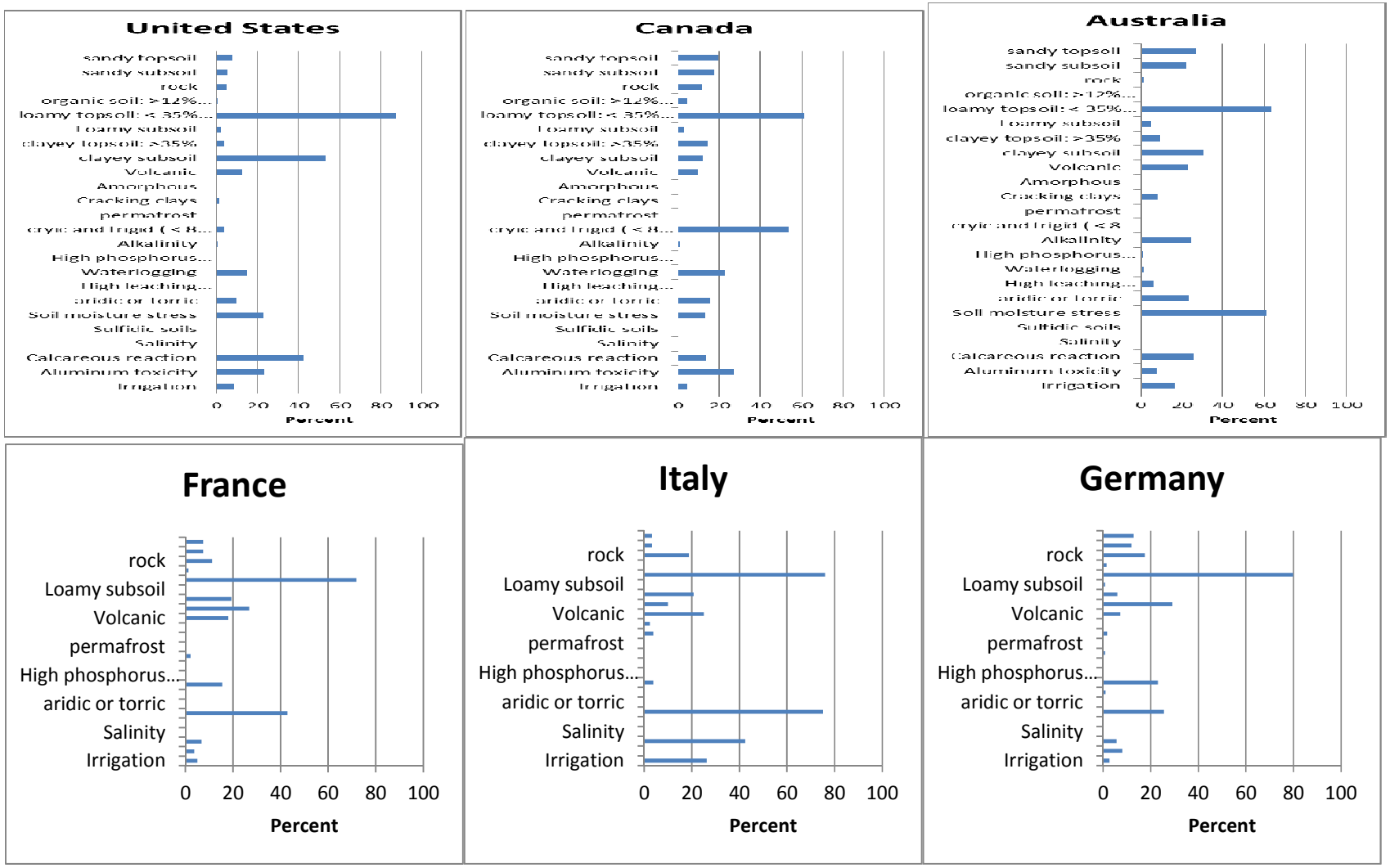
Table 8. Prices of Capital Input Relative to U.S. in 2005

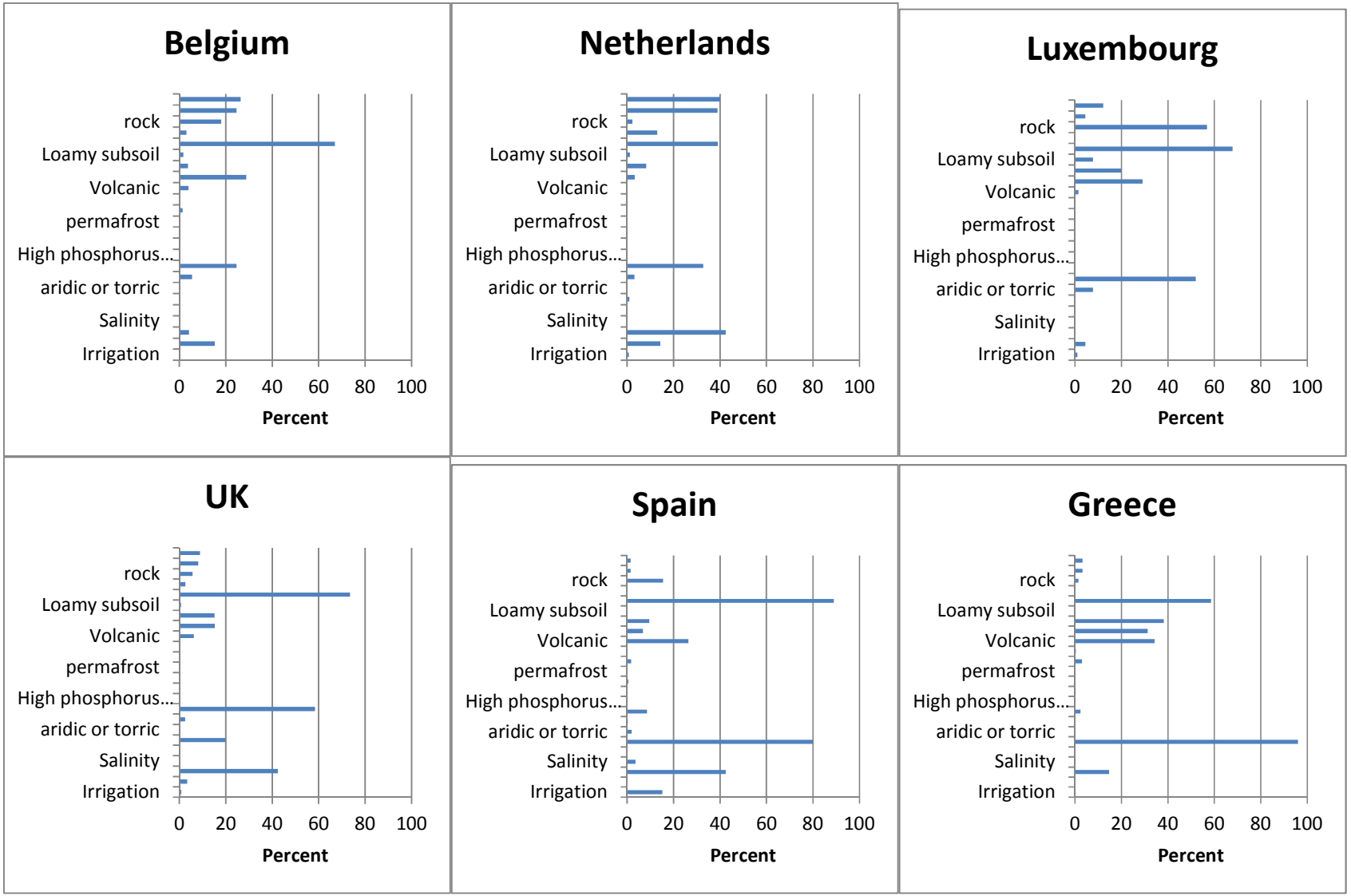
Year	Belgium	Denmark	Germany	Greece	Spain'	France	Ireland	Italy	Luxem-burg	NL	Portugal	Finland	Sweden	UK	Australia	Canada	US
1973	0.5581	0.4600	0.4332	1.1809	0.3966	0.9403	0.4294	0.4335	0.2949	0.3120	0.3629	0.3756	0.3336	0.7526	0.3628	0.5156	0.3982
1974	0.6787	0.5463	0.5144	1.1234	0.5305	1.0238	0.7547	0.5287	0.2822	0.3973	0.4324	0.4929	0.3475	0.8490	0.4084	0.5737	0.3957
1975	0.8077	0.5899	0.5038	1.0361	0.3924	1.3521	0.9842	0.5189	0.3215	0.4347	0.4086	0.5379	0.4318	0.8686	0.4011	0.5664	0.3180
1976	0.7927	0.4670	0.4178	0.5949	0.3617	1.2346	0.9731	0.4227	0.3425	0.4225	0.3320	0.6572	0.4327	0.7178	0.4112	0.6308	0.3198
1977	0.8255	0.4433	0.4016	0.5924	0.3252	1.1354	0.8836	0.4095	0.4582	0.4735	0.3441	0.7984	0.4377	0.4881	0.4082	0.5356	0.6382
1978	0.8661	0.6584	0.4355	0.6614	0.5044	1.1452	0.7338	0.3685	0.5083	0.5648	0.4430	0.9926	0.4567	0.3815	0.4596	0.6146	0.6261
1979	1.0805	1.0356	0.6484	0.8199	0.5243	1.0728	0.7218	0.3755	0.5761	0.6424	0.4305	1.2927	0.5144	0.4780	0.4874	0.7559	0.8068
1980	1.7615	1.4230	1.0220	1.1128	0.7707	1.1478	0.5816	0.5882	0.6259	0.7775	0.5255	1.7802	0.6184	0.5888	0.5437	1.1175	1.0504
1981	2.0649	1.4687	1.2579	1.3111	0.5624	1.2230	0.5785	0.5532	0.5507	0.7835	0.5497	1.8810	0.6778	0.5483	0.7033	1.6411	1.5687
1982	2.0217	1.5400	1.3242	1.3637	0.5639	1.3533	0.5519	0.5440	0.5601	0.8362	0.6907	1.7883	0.5936	0.5074	0.8352	1.4857	1.4567
1983	1.7298	1.4555	1.2474	1.1014	0.6572	1.3148	0.4449	0.5068	0.5121	0.8137	0.8565	1.5450	0.5301	0.4572	0.7104	1.1831	1.5944
1984	1.5819	1.2065	1.1125	0.8817	0.6333	1.1109	0.4298	0.4442	0.4835	0.7005	0.8864	1.6040	0.5359	0.5588	0.7151	1.5140	1.7026
1985	1.5583	1.0456	1.1286	0.6997	0.3857	0.9425	0.4323	0.4099	0.5015	0.7352	0.6698	1.6865	0.5424	0.7289	0.7693	1.4352	1.4510
1986	1.8944	1.3174	1.5024	0.7960	0.6358	1.0401	0.4950	0.5627	0.6765	1.1813	0.9997	2.0329	0.6345	0.7550	0.9338	1.2993	1.0227
1987	2.1906	1.8753	1.7553	1.0455	0.9329	1.0882	0.5326	0.7264	0.9054	1.6092	1.3581	2.5246	0.7255	1.0494	1.1586	1.4997	1.1822
1988	2.3343	2.1381	1.9032	1.2206	1.2021	1.1272	0.6488	0.7746	0.9819	1.9505	1.3288	2.9231	0.7988	1.1519	1.4214	1.5608	1.1610
1989	2.4840	2.2120	1.9453	1.3466	1.5433	1.1969	0.7623	1.0789	1.0861	2.0465	1.4894	3.1547	0.8682	1.1429	1.5720	1.7659	1.1666
1990	3.0723	2.7859	2.5968	1.6714	2.2872	1.6892	1.0557	1.4459	1.7262	2.7257	1.6326	3.9217	1.1182	1.4568	1.5619	2.0642	1.1947
1991	3.1759	2.6361	2.8586	1.9778	1.8667	1.9346	1.0634	1.4546	1.8212	2.9472	1.5418	3.8031	1.0963	0.9687	1.4841	2.0420	1.0525
1992	3.4602	2.8045	3.0994	2.1619	1.8297	2.3449	1.4166	1.7350	2.2082	3.1300	1.4210	2.9648	1.0681	1.0165	1.4281	1.8554	0.9008
1993	2.9068	2.6303	2.5428	2.0880	0.8393	2.2722	1.3160	1.4924	1.8396	2.7145	1.0683	2.0356	0.7235	0.8962	1.3060	1.8129	0.9107
1994	2.7738	2.9540	2.3740	2.1420	1.0791	2.3122	1.2244	1.5324	1.7562	2.6469	1.4706	2.2486	0.8550	1.2127	1.6259	1.8525	1.2606
1995	3.2918	3.7509	2.7281	2.2039	2.0559	2.6389	1.5856	1.7742	2.1092	3.1018	2.3261	2.8335	1.2032	1.8939	1.8887	1.9861	1.3040
1996	3.0447	3.8794	2.6527	2.0417	1.5273	2.6410	1.6489	1.9314	2.0476	2.8632	2.8125	1.8438	1.3245	2.1790	1.9154	1.7564	1.3302
1997	2.7389	3.4106	2.3434	1.4591	0.8934	2.3362	1.5817	1.5395	1.6318	2.4238	2.6777	1.9452	1.1244	2.0325	1.6781	1.7948	1.5826
1998	2.6830	3.3029	2.2516	1.2433	0.6383	2.2360	1.3816	0.9468	1.5042	1.9779	2.1112	1.7320	0.9873	1.8556	1.3157	1.8487	1.3845
1999	2.7422	3.0131	2.1053	1.2275	0.4991	1.9966	1.2140	0.8812	1.6053	2.0332	1.5307	1.4537	0.9322	1.7111	1.4190	2.3256	1.6914
2000	2.4472	2.6649	1.9492	0.9771	0.6546	1.7793	1.0333	0.9598	1.6375	2.1467	1.4370	1.6413	0.9220	1.6673	1.3648	2.0879	1.8229
2001	2.3274	2.7530	2.0475	0.8135	0.8377	1.8909	0.9818	0.9753	1.6130	1.9252	1.5663	1.5765	0.8259	1.8310	1.0535	1.4245	1.2260
2002	2.3535	2.8842	2.0912	0.9465	0.7156	2.0810	0.9581	0.9101	1.8106	1.8205	1.6811	1.5837	0.9516	2.0655	1.0494	1.8965	1.0818
2003	2.6387	3.3380	2.2449	1.0957	0.8794	2.4202	1.1557	0.8973	1.8455	1.9276	1.8607	1.9933	1.2454	1.7984	1.3132	2.1165	1.0277
2004	2.8533	3.7815	2.2986	1.1962	0.7004	2.4957	1.2708	0.9842	1.5987	2.2124	2.1583	2.6502	1.2726	2.0268	1.6128	1.5345	0.9033
2005	2.6153	3.9114	2.3103	1.2881	0.7615	2.4680	1.3071	1.1005	1.3247	2.4757	2.1794	2.5207	1.2627	2.0463	1.7130	1.1862	1.0000
2006	2.6208	3.8441	2.3871	1.2773	0.8404	2.4119	1.2832	1.2640	1.5344	2.4622	2.3420	2.6886	1.2777	2.0246	1.6139	1.7123	1.3582
2007	3.0551	4.4040	2.8218	1.5842	1.0731	2.6223	1.3401	1.6353	2.1427	3.0456	2.6862	3.2111	1.4919	2.5851	1.8126	2.1557	1.4102
2008	3.5446	5.1714	3.2471	1.9256	1.5428	2.8925	1.9981	1.8143	2.5999	3.8679	4.0689	3.2269	1.4566	2.7364	1.8692	1.5673	1.1146
2009	3.4811	4.7103	2.9749	1.3805	1.7867	2.8451	2.6759	1.6687	2.6309	3.5697	5.3388	2.8388	1.1862	1.5550	1.5754	1.6821	1.0020
2010	3.4583	4.2884	2.6693	1.5930	1.7971	2.7822	3.6859	1.6813	2.2183	3.5846	7.3550	2.6414	1.2222	1.8988	2.4697	2.9851	1.0522
2011	3.9293	3.8350	2.7187	2.6814	1.2803	2.9477	5.3826	2.7890	1.9657	3.9862	13.0697	3.1150	1.3714	1.3439	2.3575	1.9198	1.0352

Table 9. Capital Input (Millions of 2005 U.S. dollars)

Year	Belgium	Denmark	Germany	Greece	Spain'	France	Ireland	Italy	Luxem-burg	NL	Portugal	Finland	Sweden	UK	Australia	Canada	US
1973	443	735	9075	1760	4897	5083	975	9989	76	1078	420	880	1326	3782	4586	2501	33147
1974	463	784	9159	1765	4952	5205	1004	10098	78	1159	447	883	1311	3835	4730	2646	34002
1975	482	822	9178	1791	4942	5326	989	10119	79	1234	482	891	1306	3908	4856	2819	35055
1976	485	868	9212	1851	4974	5419	994	10225	80	1278	519	901	1321	3911	4993	3046	35782
1977	492	927	9288	1907	5021	5514	1015	10413	79	1331	547	911	1342	3870	5164	3330	35424
1978	503	955	9439	1960	5077	5589	1037	10643	78	1430	579	917	1342	3966	5314	3522	35942
1979	521	993	9386	1975	5162	5699	1067	10935	79	1549	599	921	1330	4006	5478	3697	36580
1980	525	1025	9448	2044	5261	5809	1102	10943	79	1656	623	927	1319	4029	5690	3871	37144
1981	522	1031	9461	2102	5388	5888	1127	11064	79	1708	644	941	1289	3993	5724	3947	37027
1982	518	1024	9415	2123	5471	5944	1160	11103	78	1745	659	953	1264	3976	5840	3968	36651
1983	516	1016	9369	2146	5531	6006	1174	11123	79	1783	659	971	1247	4002	5932	3929	35894
1984	512	1015	9364	2145	5582	6038	1175	11118	80	1839	658	967	1232	3992	6030	3844	35148
1985	508	1014	9330	2140	5659	6067	1173	11116	79	1863	651	996	1227	4051	6130	3770	34360
1986	504	1023	9296	2153	5659	6077	1165	11112	78	1885	641	1002	1206	4078	6188	3633	33169
1987	503	1031	9248	2073	5685	6058	1157	11108	76	1889	639	997	1178	4056	6205	3485	31857
1988	501	1030	9197	1971	5700	6028	1144	11111	75	1903	648	1002	1154	4034	6221	3341	30955
1989	499	1023	9169	1892	5668	6027	1138	11151	75	1913	684	1006	1139	4000	6271	3201	30170
1990	496	1027	9789	1835	5611	6060	1146	11177	74	1932	710	994	1133	3984	6324	3078	29579
1991	494	1026	9715	1769	5504	6071	1153	11163	75	1948	701	1015	1117	3978	6334	2956	29110
1992	489	1019	9713	1710	5441	6058	1151	11127	75	1964	690	1008	1086	3926	6311	2854	28492
1993	490	992	9736	1663	5300	6017	1147	11067	76	1982	682	973	1052	3891	6295	2763	27798
1994	486	960	9685	1598	5143	5956	1142	10962	75	1968	662	945	1017	3899	6261	2729	27254
1995	478	961	9602	1545	5029	5920	1150	10894	75	1950	648	925	998	3915	6246	2693	26863
1996	472	966	9518	1507	4955	5914	1153	10823	74	1942	634	902	981	3945	6279	2672	26467
1997	468	974	9452	1480	4954	5936	1172	10776	74	1925	626	895	966	3958	6315	2647	26224
1998	465	980	9398	1465	4955	5973	1173	10759	73	1924	621	897	956	3942	6372	2672	26088
1999	464	970	9285	1465	5022	6031	1177	10744	72	1922	615	897	944	3885	6471	2708	26014
2000	463	969	9238	1484	4821	6095	1177	10734	71	1932	617	902	940	3795	6553	2700	25845
2001	463	977	9212	1517	4815	6135	1174	10760	70	1937	618	904	952	3769	6614	2695	25710
2002	464	985	9153	1523	4816	6160	1169	10769	69	1957	619	907	961	3741	6664	2671	25718
2003	466	986	9149	1554	4835	6175	1165	10878	68	1952	619	914	976	3705	6731	2665	25759
2004	467	992	9097	1603	5026	6197	1158	10972	69	1957	618	924	986	3687	6833	2659	26048
2005	469	1005	9046	1635	5108	6234	1158	11130	70	1955	620	922	995	3689	6916	2685	26590
2006	472	1013	8929	1690	5108	6260	1155	11203	70	1947	618	933	997	3709	7019	2648	26714
2007	478	1013	8880	1723	5148	6293	1162	11256	71	1953	615	931	1002	3693	7133	2616	26552
2008	493	1034	8862	1790	5203	6362	1204	11259	71	1988	614	926	1017	3719	7205	2655	26695
2009	494	1035	8917	1889	5256	6457	1231	11385	72	2023	613	925	1038	3729	7349	2684	27290
2010	508	1032	8834	1902	5313	6471	1216	11337	72	2021	610	939	1046	3761	7523	2706	27217
2011	518	1024	8785	1878	5351	6429	1204	11272	73	2027	609	927	1050	3802	7707	2762	27286

Figure 1. Levels of Attributes.




Belgium
rock
Loamy subsoil
Volcanic
permafrost
High phosphorus...
aridic or torric
Salinity
Irrigation
0
20
40
60
80
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Percent
Netherlands
rock
Loamy subsoil
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permafrost
High phosphorus...
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Salinity
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Luxembourg
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Loamy subsoil
Volcanic
permafrost
High phosphorus...
aridic or torric
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Irrigation
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UK
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Loamy subsoil
Volcanic
permafrost
High phosphorus...
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Salinity
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Spain
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Loamy subsoil
Volcanic
permafrost
High phosphorus...
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Volcanic
permafrost
High phosphorus...
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Salinity
Irrigation
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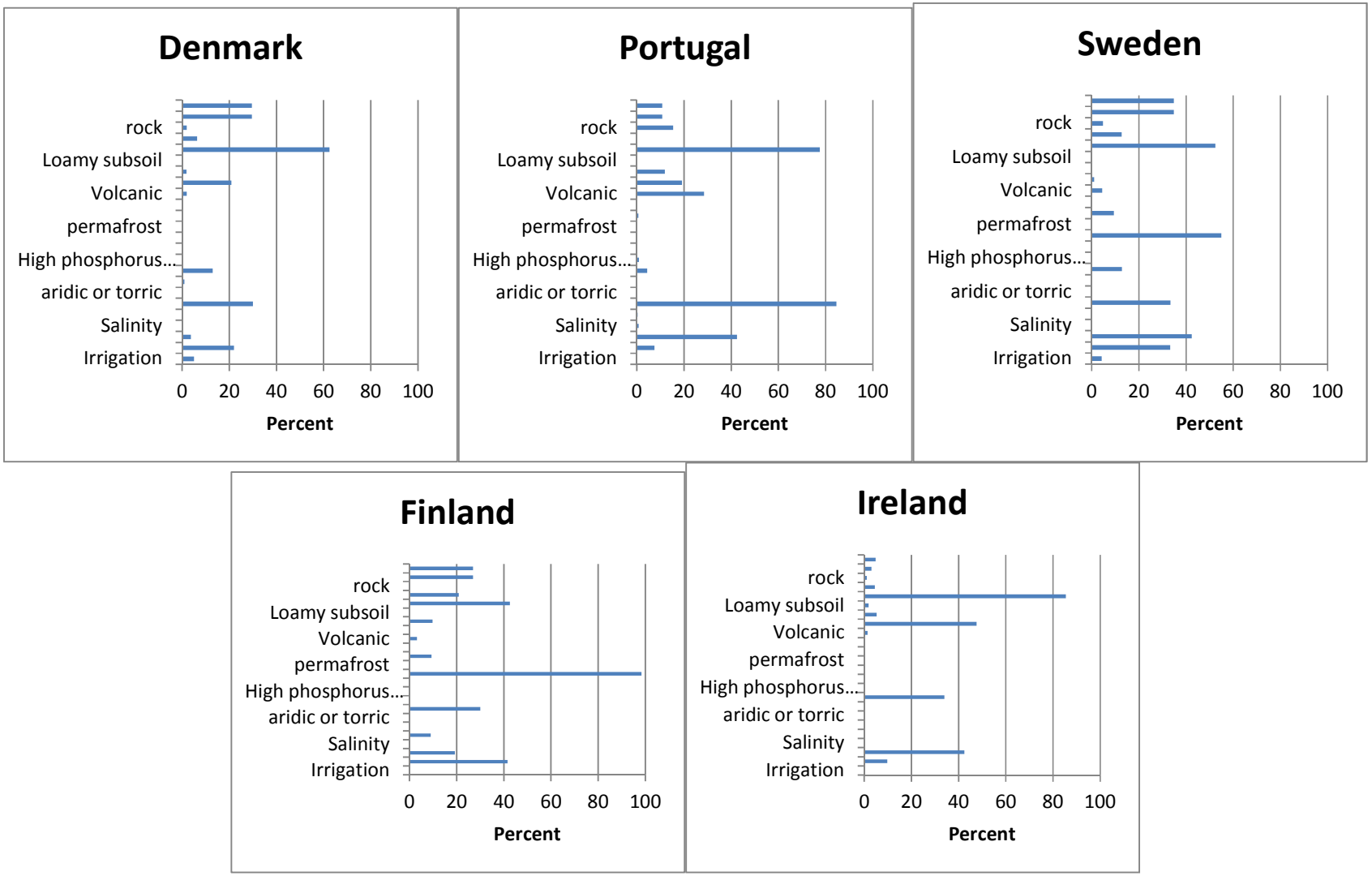
Denmark
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Loamy subsoil
Volcanic
permafrost
High phosphorus...
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Volcanic
permafrost
High phosphorus...
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permafrost
High phosphorus...
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Salinity
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Loamy subsoil
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permafrost
High phosphorus...
aridic or torric
Salinity
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