# CENTRE FOR APPLIED MACROECONOMIC ANALYSIS

The Australian National University

# A NOTE ON COMPETITIVENESS, UNIT LABOR COSTS AND GROWTH: IS "KALDOR'S PARADOX" A FIGMENT OF INTERPRETATION?

**Jesus Felipe**
Asian Development Bank

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**Jesus Felipe**
**Macroeconomics and Finance Research Division**
**Asian Development Bank**
**6 ADB Avenue, Mandaluyong**
**Philippines**

**e-mail: jfelipe@adb.org**

**February 13, 2005**

Abstract: This paper shows that *unit labor costs* (*ulcs*), the most widely used measure of competitiveness, can be interpreted as the labor share in output multiplied by a price-adjustment factor. This has three main implications. First, *ulcs* are not just a technical concept since they embody the social relations that affect the distribution of income between the social classes. Secondly, lower *ulcs* should not necessarily be interpreted as implying that an economy is more competitive, i.e., that it will grow faster, and vice-versa. In *wage-led* growth economies, an increase in the wage share leads to an increase in the equilibrium capacity utilization rate, which leads to an increase in the growth rate of the capital stock. Hence it is possible to find that the countries with fast-growing *ulcs* are the ones registering faster growth in exports or in GDP. Once one analyzes *ulcs* taking into account their functional distribution dimension, "Kaldor's paradox" ceases to be an anomalous result. Finally, one can define the concept of *unit capital cost* as a measure of competitiveness and shift the burden of lack of growth or loss of market share to capital.

Keywords: Competitiveness, Functional Distribution of Income, Growth, Kaldor's paradox, Unit capital costs, Unit labor costs

JEL Classification: E25; F02; O47; O53

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## 1. INTRODUCTION

During the last two decades, *competitiveness* has taken the center stage of many policy discussions, and it is changing the nature of the policymaking game in developing countries.[1] Policymakers in these countries often make references to the "competitiveness problem" and use different indicators of competitiveness to compare and rank countries. This paper analyzes the most widely used measure of competitiveness, namely, *unit labor costs* (*ulcs*), the ratio of the nominal wage rate to labor productivity.[2] Under this definition, competitiveness is a question of costs and productivity, and thus, discussions in many developing countries today (in fact, all over the world) are about how to lower *ulcs*.[3] This paper discusses some implications of this use of *ulcs* for policy analyses. The discussion arises because unit labor costs are related to the functional distribution of income, since they can be interpreted as labor shares in output. It is argued that, under this view, the standard association between lower unit labor costs and higher competitiveness ceases to be a straightforward issue.

The paper is structured as follows. Section 2 reviews the theory of unit labor costs. Section 3 relates the concept of unit labor costs to the functional distribution of income, namely, the distribution of income between the wages and profits. It is shown that unit labor costs can be written as the product of the labor share in output times a price adjustment factor. The implications of analyzing *ulcs* as labor shares are discussed. The section also introduces the concept of *unit capital costs* (*ukc*), defined as the ratio of the nominal profit rate to capital productivity, and argues that as the problem of lowering *ulcs* puts pressure on labor, the concept of *ukc* shifts the burden of competitiveness on to capital. Section 4 provides a rationale for Kaldor's paradox, the empirical finding that the countries with the faster growing *ulcs* are the ones registering faster export of GDP growth (Kaldor 1978). It is argued that in *wage-led growth* economies an increase in the wage share leads to an increase in the equilibrium capacity utilization rate, which leads to an increase in the growth rate of the capital stock. Section 5 concludes.

## 2. THEORY OF UNIT LABOR COSTS

The most commonly held approach to international competitiveness focuses on differences in *ulcs*, and institutions such as the International Monetary Fund or the Organization for Economic Development and Cooperation construct them with a view to analyzing international competitiveness. Unit labor costs are defined as the cost of worker compensation and benefits per unit of manufactured output. At the most intuitive

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[1]	In fact, today's three buzzwords are *globalization*, *technological progress* and *competitiveness*. Any analysis of the current economic situation starts with a reference to the first, and takes the latter two as policy-making variables.

[2]	Other possible measures of competitiveness such as export unit values and real effective exchange rates, also used, are perhaps less reliable as they may be subject to fluctuations due to capital flows.

[3]	During the last few years there has been an attempt at defining competitiveness more broadly. Unit labor costs are sometimes referred to as a measure of "price competitiveness". Lall (2001), among others, has forcefully argued that competitiveness goes well beyond price. While this is correct, in this Note I only consider unit labor costs.

level, they are used as a measure of competitiveness because wages are a major component of costs and hence of prices. But costs will be reduced if for any given money wage the level of productivity is higher.

At the theoretical level, there is a connection between competitiveness defined this way and the theory of comparative advantage. In fact, competitiveness, in standard analyses, is about comparative advantage. In its simplest way, the Ricardian model states that countries will specialize in the production and export of the product in which they have the lower unit labor requirement. According to this model and contrary to popular fears, international differences in wage rates do not preclude mutually beneficial trade. Overall differences in productivity (absolute advantage) determine wages, while sector-specific differentials in productivity and costs determine trade patterns. To the extent that low wages reflect low labor productivity, any advantage in employing low-wage labor is offset.

The implication, the argument goes, is that an absolute productivity advantage over other countries in producing a good is neither a necessary nor a sufficient condition for having a comparative advantage. Moreover, the competitive advantage of an industry depends not only on its productivity relative to the foreign industry, but also on the domestic wage rate relative to the foreign wage rate; in other words, on the *ulcs* in each country. An implication of this argument is that discussing (foreign) competition based on low wages represents a misconception. A lower foreign wage rate is irrelevant. What matters is the wage rate relative to labor productivity. Whether the lower cost of a good produced by a foreign country is due to high productivity or to a low wage rate does not matter. High-wage countries can compete against low-wage countries due to their higher productivity. This dismisses the so-called "sweatshop labor" argument, according to which foreign competition based on low wages damages one's industries.[4] The overall implication is that higher growth in *ulcs* decreases exports, increases imports and slows down economic growth.

Algebraically, *ulcs* are defined as the ratio of the nominal wage rate (e.g., $ per worker) to labor productivity, where the latter is defined as the "quantity" of output produced per worker (e.g., bushels of corn per worker), that is,

$$ulc^{Q} = w_n / (Q / L)$$  (1)

where $w_n$ denotes the nominal wage rate, $Q$ is physical output and $L$ is employment (e.g., no. workers). Therefore, the theoretical unit of measurement of *ulcs* is $ per bushel of corn. It is a price (or cost). The standard argument is that the lower the *ulc* the more competitive the economy is. Unit labor costs are an important variable for policy-making (Fagerberg 1988). In the standard interpretation, if the *ulc* of a country grows faster than that of its competitor(s), this will reduce market shares at home and abroad, negatively affect economic growth, and increase unemployment.

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[4]    Golub (1997, 9) indicates that: "…most developing countries continue to run trade deficits in manufactures with the industrial countries, which would be unlikely if their unit labor costs in manufacturing were as low, relative to the industrial countries, as their wages." In other words, Golub's argument is that developing countries' unit labor costs must be at least as high as those of the developed countries.

In the context of the analysis of Harrod's multiplier and the balance of payments constraint, Kaldor (1970, 1971) argued that the growth rate of an economy depends on the growth rate of exports, which itself depends on world demand and the international competitiveness of exports. According to Kaldor, *export competitiveness* depends on the dynamic evolution of the money wage and of productivity. The evidence on the inverse relationship between output growth and the growth rate of *ulcs* is, paradoxically, inconclusive, since at times researchers have found that the fastest growing countries in terms of exports and GDP in the post-war period have at the same time experienced faster growth in their *ulcs* than other countries, and vice-versa. This is referred to in the literature as "Kaldor's Paradox" axfter Kaldor (1978) (see also McCombie and Thirlwall 1994, chapter 4). [5] [6] Fagerberg (1996) revised this enduring puzzle by analyzing the period 1978-1994, and concluded that the paradox also holds for this period. Thus, in the words of Fagerberg: "This…indicates that the popular view of growth in unit labor costs determining international competitiveness is at best too simplified. But why?" (Fagerberg 1988, p.355). [7]

At any level of aggregation, however, the quantity of output (a physical magnitude) $Q$ has to be proxied by deflated value added.[8] Therefore, the previous definition becomes:

$$ulc = \frac{w_n}{(VA_n / P)/L} = \left(\frac{w_n L}{VA_n}\right) P \qquad (2)$$

where $VA_n$ is nominal value added and $P$ is the output deflator. One implication is that now the *ulc* is not defined in terms of \$ per bushel of corn; it is a unitless magnitude.

A concern with expression (2) for purposes of intercountry comparisons is how to translate the costs calculated for individual countries into comparable or common currency units (Hooper and Larin 1989, Golub 1995). The most common method is to multiply country *i's* local currency $ulc_i$ by its current nominal exchange rate against the numeraire currency, usually the U.S. dollar (*ER*) (expressed in terms of units of the

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[5] Kaldor's argument was, in fact, a bit more sophisticated. His conclusion of an inverse relationship between output growth and the growth in relative unit labor costs (i.e., the differential between the growth rates of the unit labor costs in two countries) depended on two more equations, one expressing money wages as a function of labor productivity, and Verdoorn's law.

[6] Kaldor (1978) compared growth in unit labor costs and growth in value in market shares for exports for 12 countries fro 1963-1975. He found that for some of these countries, the relation between the two variables was positive. Kaldor concluded that no analysis of international competitiveness could be carried out by merely considering cost factors, and that the inclusion of other circumstance, such as the role of technology, was necessary. See De Benedictis (1998).

[7] From standard specifications of export and import equations, assuming long-term balanced trade, and that firms set prices by applying a mark-up on *ulcs*, Fagerberg (1988) shows that the growth of output ($\hat{y}$) can be written as $\hat{y} = \gamma[\hat{ulc} - \hat{ulc}^*] + \delta \hat{y}^*$, where the superscript $*$ refers to the rest of the world, ^ indicates denotes growth rate, and the parameters $\gamma$, $\delta$ are functions of the price and income elasticities of exports and imports. In this formulation, economic growth is written as a function of the growth in relative unit labor costs and world demand. $\gamma$ is a function of the export-price and import-price elasticities, and will be negative provided the Marshall-Lerner condition is satisfied (i.e., that the sum of these two elasticities is greater than one).

[8] Published *ulc* series refer to aggregates (manufacturing sector or total economy), not to individual firms.

country's currency per dollar). There is also a problem with output (or productivity) since it is also measured in terms of each country's currency. Therefore, a meaningful comparison of *ulcs* requires the conversion of both wages (numerator) and output (denominator) into a common currency (e.g., US dollars). There is an added issue, however, if one converts output (value added) into dollars using market exchange rates. This is the well-known problem that it is not unusual for the price of a particular good to differ substantially across countries when translated into common currency units at market exchange rates. Notice that this problem arises *because* aggregate output is not a physical quantity, but a value magnitude, however deflated. There have been several proposals to deal with this issue (Hooper and Vrankovich 1995). The two most common are the use of unit value ratios (*UVR*) and the use of purchasing power parities (*PPP*). The first one consists in estimating local-currency price levels with unit values, computed by dividing the value of manufacturing output at the industry level by measures of the quantities of those outputs (e.g., pairs of shoes) derived from each country's census of manufactures. A *PPP* exchange rate is the ratio of the local currency price of a particular basket of goods in two different countries, e.g., the number of pesos it takes to buy a hamburger in the Philippines relative to the number of dollars it takes to buy a hamburger in the Unites States.

Suppose the *ulc* in expression (2) is adjusted by the market exchange rate in the numerator and by the *PPP* exchange rate in the denominator. This way, the *ulc* becomes:

$$ ulc = \frac{(w_n / ER)}{(VA_n / PPP) / L} = \left( \frac{w_n L}{VA_n} \right) \left( \frac{PPP}{ER} \right) \tag{3}$$

where ($w_n L / VA_n$) can be referred to as the "pure *ulc* effect", and $xr = PPP / ER$ is the "price adjustment effect." The definition of the *ulc* can be further refined through a series of adjustments to the PPP exchange rate, such as for distribution margins, indirect taxes and subsidies, and international trade (Hooper and Vrankovich 1995). All these adjustments can be incorporated into the definition without altering the basic structure of formulae (2) or (3) (i.e., the product of the "pure *ulc* effect" times a series of adjustment factors).[9]

One important implication of this brief discussion is that calculating correctly *ulcs* is a difficult task for it requires good and comparable statistics across countries. Often in empirical applications researchers do not discuss clearly and openly how *ulcs* are calculated.[10]

How does a firm (country) try to maintain a low *ulc*? This issue can be analyzed by looking at the elements of expressions (2) or (3):

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[9]     With true physical data the *ulc* would be calculated as indicated above, that is, $ulc^Q = w_n / (Q / L) = (w_n L) / Q$, where $Q$ is output in physical terms (homogeneous output). Note that if *Q* were available there would be no reason and need to use any exchange rate to compare outputs across countries.

[10]     After reviewing a number of studies calculating unit labor costs, this author has concluded that researchers are often sloppy in calculating *ulcs*, for they take "any" two series of wage rates and labor productivity and divide them without checking if they are, at least, consistent with each other.

(i) The first one is by keeping nominal wages ($w_n$) low (austerity). This is something that certainly firms try to do constantly in their bargaining with labor, especially in developing countries, due to the lack of organized labor through unions, and due to the existence of surplus labor, even though there is agreement that this is not a wise long-term strategy (Lall 2001), and nominal wages tend to be rigid downwards.

(ii) The second option, the one every firm and country aims at, is to increase labor productivity ($VA/L$), where $VA = (VA_n / P)$ in expression (1), and $VA = (VA_n / PPP)$ in expression (3).[11] The underlying idea is that economic development is supposed to make the country's economic activities more competitive thanks to superior advances in productivity by lowering *ulcs* even if wages rise. There are four mechanisms to achieve this. First, by increasing physical investment, that is, by increasing capital deepening (the capital-labor ratio). This has a triple effect: (a) each worker becomes more productive with a higher amount of capital; (b) the introduction of machines that bring in more up-to-date production technologies raises labor productivity; and (c) technological progress often destroys employment, at least in the short run. The second mechanism is investment in human capital. The third mechanism to increase labor productivity is through institutional factors such as change in work rules, i.e., the way labor is organized to operate the equipment, and by improving the rules and regulations governing competition. The final mechanism used by firms to increase labor productivity is to increase the unpaid labor time. This happens often in developing countries due to lax implementation of labor laws.

(iii) The third possibility (in terms of equation (3)) is through nominal depreciations of the exchange rate ($ER$). At the firm level nothing can be done in this area. At the national level, however, authorities can manipulate their exchange rates and intervene in the foreign exchange market. Again, the literature argues that this is not a desirable long-run strategy. Often in developing countries the *PPP* exchange rate is below the market exchange rate (*ER*), which means that $xr < 1$. In the developed countries, on the other hand, $xr \cong 1$.

For all practical purposes, firms (countries) try to keep down *ulcs* through a combination of all these mechanisms. Nominal wages ($w_n$) and labor productivity ($VA/L$) tend to move together since the latter is the most important determinant of the former; the question is which one does it faster. In this context, the key concern is how gains in labor productivity are passed on to wages in the labor-capital bargaining process. This is discussed below.

## 3. UNIT LABOR COSTS AND INCOME DISTRIBUTION
To understand the connection between competitiveness measured in terms of *ulcs*, Kaldor's paradox and the functional distribution of income, consider the National Income

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[11] It is important to remark that labor productivity is the ratio of output produced in physical terms to the number of workers. The corresponding concept in value (or monetary) terms with aggregate data is labor productivity with deflated output, i.e., in "real" terms, $(VA/L)$, and not $(VA_n / L)$. In other words: there is no such a thing as labor productivity in "nominal" terms.

and Product Accounts (NIPA) identity that relates nominal value added ($VA_n$) to the total wage bill ($W_n$) plus total profits ($\Pi_n$), that is:

$$VA_n \equiv P\,VA \equiv W_n + \Pi_n \equiv w_n L + r_n K \tag{4}$$

where $W_n$ (total wage bill) can be written as the product of the average nominal wage rate ($w_n$) times employment ($L$); and $\Pi_n$ ( total profits) as the product of the nominal ex-post profit rate ($r_n$) times the stock of capital ($K$). Finally, $VA$ is value added in real terms and $P$ is as before the output deflator (i.e., $VA = VA_n / P$). Dividing through by $VA_n$ yields:

$$1 \equiv \frac{W_n}{VA_n} + \frac{\Pi_n}{VA_n} \equiv \left(\frac{w_n L}{VA_n}\right) + \left(\frac{r_n K}{VA_n}\right) \equiv s^L + s^K \tag{5}$$

where $s^L \equiv (W_n / VA_n) \equiv (w_n L / VA_n)$ is the share of labor in value added and $s^K \equiv (\Pi_n / VA_n) \equiv (r_n K / VA_n)$ is the share of capital with $s^L + s^K \equiv 1$. It is important to note that in writing this accounting identity no assumption about the state of the economy (e.g., whether factor prices equal their respective marginal productivities) or about the degree of returns to scale is made. It simply reflects how data appear collected and organized in the NIPA, which is theory-independent.[12]

The obvious point of this simple derivation is that the *ulc* defined in expressions (2) and (3) is always the product of the labor share in output ($s^L$), what we called before the "pure *ulc* effect", times a "price adjustment effect." In the case of expression (2) the latter term is the output deflator, thus, $ulc = s^L P$; and in the case of expression (3) it is the ratio of purchasing power parity exchange rate to the market exchange rate, thus $ulc = s^L xr$.[13] Moreover, it is worth noting that both $s^L$ and $xr$ are unitless magnitudes (the term $xr$ measures the extent of under (<1) or over (>1) valuation of the currency against the US dollar) and $0 \le s^L \le 1$. This implies that if $ulc = s^L P$ >1 (or if $ulc = s^L xr$ >1) it must be due exclusively to the "price adjustment effect" (i.e., to the fact that $P$ >1 or $xr$ >1).[14]

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[12] The labor share is calculated with the wage rate and value added in nominal terms. There is no such a thing as the "labor share in real terms." If one deflates wage rate and nominal value added per worker with the same deflator (like here), then the issue is very simple. And if one calculated the labor share with the nominal wage rate deflated with the consumer price index and value added per worker deflated with the output deflator, one could get the surprising result that the labor share is above one.

[13] At aggregation levels below the total economy (e.g., sectors) one could also define the *ulc* in terms of gross output. In this case, the accounting identity for gross output includes intermediate materials. In this case the labor share would be lower than that in terms of value added.

[14] With physical data there is also an accounting identity, namely, $pQ \equiv w_n L + r_n K$, where $p$ is now the unit price ($ per bushel of corn), not a price deflator, which implies that $p \equiv [(w_n L)/Q] + [r_n L)/Q] \equiv p_1 + p_2$. The unit of $p$ is $ per bushel of corn (where

The previous analysis has three implications. First, competitiveness, measured or interpreted in terms of unit labor costs, is not just a technical concept. It embodies the social relations that affect the distribution of income between the social classes. Secondly, if the *ulc* is decreasing (and thus the economy is considered more competitive), it means, *ceteris paribus*, that the labor share $s^L$ is decreasing, and thus the capital share $s^K$ is increasing.[15] Indeed, Glyn (1997, Table 5) documents the existence of an inverse relationship between changes in capital's share and changes in manufacturing relative unit labor costs.[16] This consideration has profound implications for understanding growth in an economy, the policy implications of *ulcs*, and discussions about competitiveness. Thirdly, it can be argued that the analysis of competitiveness could be equally carried out in terms of what could be defined as the *unit capital cost* (*ukc*), defined as the ratio of the nominal profit rate to capital productivity, i.e.,

$$ukc = \frac{r_n}{(VA_n / P)/K} = \left(\frac{r_n K}{VA_n}\right) P \tag{6}$$

or $ukc = s^K P$ (and similarly, $ukc = s^K xr$), and argue that the lower the *ukc* the more competitive the economy. Effectively, this means that the lower the capital share the more competitive the economy. The notion of *ukc* shifts the burden of competitiveness on to capital, i.e., to become more competitive, capitalists have to accept lower profit rates or increase the productivity of the capital invested. This may be an important policy argument in the case of developing countries. As argued above, at the most simple level, *ulcs* are used as a measure of competitiveness because wages are a major component of costs. While this may be true in the case of the developed countries, evidence indicates that this is not the case in the developing countries, where the labor share is a minor component of the cost structure. Gollin (2002) indicates that: (i) according to the National Accounts Statistics of the United Nations, 18 countries reported employee compensation shares below 0.3 in 1994. Ghana, for example, reports a labor share of 0.05; and (ii) that, in general, "the data appear to show some consistent patterns. Poor countries are more likely than rich countries to have low shares of employee compensation in GDP" (Gollin 2002, p.461). Harrison (2002) also documents the low labor shares of many developing countries.

Gollin (2002) argues that a possible reason why developing countries have such low labor shares is that they are most likely underestimated due to the fact that they fail to account for labor income of the self-employed, which appears registered as profits. Once

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$p_1 = (w_n L)/Q = ulc^Q$ -$ per bushel- is the "labor contribution" to *p*; and $p_2 = (r_n K)/Q$ -$ per bushel- is "capital's contribution" to *p*). In terms of shares: $1 \equiv [(w_n L)/(pQ)] + [(r_n L)/(pQ)] \equiv s^L + s^K$, which implies $ulc^Q = s^L p$, the units of which are $ per bushel of corn.

[15]    Apart from Goodwin (1972), Glyn (1997), or Diwan (2002), researchers have not "fully" realized that *ulcs* and labor shares are, intrinsically, the same idea, and thus they have not explored the implications, that is, the distributional dimension of the former.

[16]    Glyn (1997, p.607) recognizes, implicitly, the relationship between unit labor costs and the labor share: "If the 'law of one price' held, then there would have to be a one-for-one relationship between RULC [relative unit labor cost] and the wage share." Indeed, this would be the case if *P=ER* in equation (2) (or *PPP=ER* in equation (3)).

this is properly accounted for as labor income, the share of labor of these countries increases substantially and is similar to that of the developed countries. While this is true, the fact is that most calculations do not correct for this, and thus the calculated unit labor costs are underestimated too. This is very important in developing countries where small enterprises and self-employment account for large fractions of the workforce. Once the labor share is adjusted upward by including this component, the labor share of most developing countries turns out to be very similar to that of the developed countries, around 0.7.[17] [18]

Using data for the Philippines for the period 1980-2003, Figure 1 shows the adjusted labor share following Gollin's procedure (i.e., apportioning as wages an estimate of what is recorded under profits).[19] The capital share is the mirror image.[20] The labor share has decreased during the two-decade period considered form around 0.75 to around 0.65. Now we multiply labor and capital shares by the GDP deflator to construct the unit labor cost and the unit capital cost according to equations (2) and (6), respectively. Results are shown in Figure 2. The first aspect to note is that the increase in both unit costs is mostly the result of the upward trend of the deflator. This is even more obvious in the case of the unit labor cost, given that the labor share is decreasing. Secondly, while the unit labor cost has increased by a factor of 9 during the period under consideration, the unit capital cost has done so by a factor of 13.

FIGURE 1 ABOUT HERE
FIGURE 2 ABOUT HERE

We now show the *ulc* constructed using equation (3), and the same for the *ukc*, i.e., with the ratio of exchange rates as price adjustment factor. These unit costs are shown in Figure 3. The most relevant feature of these series is their constancy, a pattern very different from those in Figure 2.

FIGURE 3 ABOUT HERE

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[17] Labor shares do not generally show a marked trend. They tend to fluctuate around some value. Harrison (2002), on the other hand, finds large variations in labor shares across countries and that, for many, labor shares have declined during the last decades. Diwan (2001, 2002) also fins a negative trend in labor shares, accentuated in periods of crises. Goldstein (1986, p.602) indicates that in the US, for example, *ulcs* typically decline from the initial through to the mid expansion of the business cycle and then increase throughout the remainder of the cycle. This is because *ulcs* are affected and determined by class conflict issues.

[18] See Thirlwall (1972) for an early discussion of some of these issues and comparisons of the labor shares in the UK and the US.

[19] The labor share shown is the average of two adjusted labor shares estimated following two of Gollin's three methods. See  Felipe and Sipin (2004) for details.

[20] Young (2000, pp.38-41 and Table XXIII) provides the labor share for China and argues that due to the low importance of self-employment in the country, the labor share needs no adjustment. The labor share has been constant at around 0.60 for the 15 years for which Young provides data (1980-1995).

Interestingly, Golub (1997, Figure 1) found that some developing countries (e.g., India) have a *ulc* above that of the US.[21] However, this finding is difficult to reconcile with the logic above. This is because since the NIPA tend to show that labor shares of developed countries are higher than those of developing countries (Gollin 2002, p. 473), and in general $xr < 1$ in developing countries and $xr \cong 1$ in the developed ones, one would expect *ulcs* in the developed countries to be higher. Thus, whether developed countries' labor shares are truly higher than those of developing countries is an important issue. Indeed, in the Philippines, for example, the ratio of labor compensation to GDP according to the National Income and Product Accounts for 1980-2003, without Gollin's (2002) adjustments, oscillates around 0.26-0.30 (Figure 4).

FIGURE 4 ABOUT HERE

If we use the unadjusted labor and capital shares, the resulting unit costs change dramatically. Indeed, since now the capital share is higher than the labor share, the unit capital cost is higher too, as shown in Figure 5. According to these unit costs, the problem of the Philippines lies clearly in the high and increasing unit capital costs.

FIGURE 5 ABOUT HERE

And if we finally combine the price adjustment effect *xr* with the unadjusted factor shares, the resulting unit costs are those shown in Figure 6, relatively constant and similar to those in Figure 3.

FIGURE 6 ABOUT HERE

## 4. UNIT LABOR COSTS, COMPETITIVENESS, GROWTH AND KALDOR'S PARADOX

Thinking of *ulcs* by introducing the distribution dimension makes one reflect upon the concept of *competitiveness* in a different way. This is because, as indicated above, in standard analyses, an economy is deemed more competitive the lower its *ulc* is. The flip side of this line of reasoning is that an economy is more competitive the lower its labor share is, *ceteris paribus*. Hence, a great deal of policies to lower *ulcs* are, effectively, polices to lower the share of labor in income. The question that this paper raises is, therefore, whether economies that are deemed more competitive (i.e., the economies that grow faster and/or gain market share) are those whose labor shares are growing the

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[21]    Golub (1997, Figure 1; original calculations are in Golub 1995) seems to indicate that the *ulc* of the Philippines for 1990 was around 1.2 times that of the United States. This is difficult to believe given UNIDO's data for the manufacturing sector (the US has a higher labor share). On the other hand, for the total economy, the labor share of the Philippines, calculated without any adjustment for self-employment effects (Gollin 2002), is around 0.28, while that of the US is around 0.7. And the ratio of PPP to the nominal exchange rate in the US is around unity, while for the Philippines around 0.25 (World Development Indicators). Note that Golub (1995, 14, equation [4]) constructed the *ulc* with respect to the US (i.e., relative unit labor cost) by multiplying the ratio of labor productivities by that of the wage rates (and then adjusting by PPP and the market exchange rate). The discussion following equation (4) in his paper indicates that he used series of wage rates and labor productivity that do not correspond to the same economic units (and perhaps different for both countries), which might lead to inconsistencies and comparability problems.

least or even declining. The answer is that this needs not be the case. Note that, in the limit, the most competitive economy would be the one with a labor share of zero and a capital share of unity. Presented this way, the argument appears to be disturbing as the mind boggles momentarily at the thought of a zero labor share (or, at least, a constantly dwindling).[22] Would it be sensible from a policy perspective to conclude that the lower labor's share the better for the economy? Surely there is something wrong here? The important aspect of this argument is that it may provide a reasonable explanation of "Kaldor's paradox."

Indeed, at the theoretical level, a higher labor share need not necessarily lead to a less competitive economy. Kalecki (1991) showed in a simple income-multiplier model that the level of national income is inversely related to the profit share (see Blecker 1999). Likewise, Goodwin's (1972) growth-cycles model locates the source of business cycles in the labor market (the effect of changes in the wage share on accumulation), where real wages and the labor share fluctuate in a cyclical fashion as a result of the impact of capital investment on employment. During an economic boom, the demand for labor rises, and unemployment falls. This causes wages to rise faster than the economy as a whole, and hence leads to a fall in profits. As a result, investment in new capital is cut back, and the economy moves to a downturn. In the slump, unemployment rises, and wages are driven down, thus restoring profitability and leading to a revival of investment. The fluctuations are self-generating. In this model factor shares oscillate between some boundaries in a self-reproducing orbit. All this indicates that the relationship between labor shares (*ulcs*) and growth is much more complex, probably nonlinear (implying that the sign of the relationship between the two variables varies over time, and that the value of the elasticity is not constant), than the simple view that lower *ulcs* imply higher growth.

As indicated above, Kalecki's simple model shows an inverse relationship between output and the profit share. Suppose firms use a mark-up model where prices are set according to a mark-up ($\mu$) on nominal wages ($w_n$) adjusted by productivity (*VA/L*), i.e., the unit labor cost,

$$P = ( 1 + \mu )[ w_n /( VA / L )] = ( 1 + \mu ) ulc \qquad (7)$$

Equation (7) implies that capital's share (referred to by Kalecki as the 'degree of monopoly') can be written as $s^K = \mu /( 1 + \mu )$, that is, as a function of the mark-up; the labor share as $s^L = 1 /( 1 + \mu )$; and as a consequence, $\mu = s^K / s^L$. It then follows that:

$$ulc = \left( \frac{w_n \, L}{VA_n} \right)\left( \frac{PPP}{ER} \right) = s^L xr = \left( \frac{1}{1 + \mu} \right) xr \qquad (8)$$

which indicates that, *ceteris paribus*, as the mark-up increases the *ulc* decreases. It does become somewhat paradoxical that as the mark-up percentage increases, typical of a *less competitive* economy in the microeconomics terminology, the economy becomes

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[22] Certainly, a zero labor share is impossible. It is possible to argue, however, that a decreasing labor share does not imply that the wage rate or even the total wage bill declines for it is possible that total output and the absolute wage bill increase. However, it is dubious that labor, as a class, would accept a constantly dwindling labor share.

*more competitive* under this view. This indicates that countries with lower mark-ups, i.e., those with more competitive market practices, will have higher *ulcs*. But these are the countries that will, in all likelihood, grow faster. This argument certainly sheds some light on why Kaldor's finding need not be an anomaly.

Moreover, let us assume a situation where workers win large wage increases and firms respond by cutting their mark-ups, while still raising prices to some extent. Under these circumstances, we have to consider two offsetting effects: (i) First, the profit share $s^K$ will fall. As income is redistributed to workers, i.e., $s^L$ increases, and since these have a higher marginal propensity to consume than capitalists, Kalecki's model indicates that output will increase. In other words: a lower degree of monopoly leads to a higher level of income. In this case (i.e., redistribution of income towards workers), aggregate demand will be affected through a decline in investment and an increase in consumption, and aggregate supply will decline or grow at a slower pace. Thus, in a 'wage-led' economy a higher real wage rate or a higher labor share stimulates demand. *Wage-led growth* occurs when the impact of profits on investment is negligible; then an increase in the wage share leads to an increase in the equilibrium capacity utilization rate, which leads to an increase in the growth rate of the capital stock and growth. Wage-led growth occurs because the increase in consumption demand derived form the increase in the labor share has a positive feedback effect on investment through raising the capacity utilization rate. Since by assumption investment is insensitive to profits, there is no dampening effect through changes in profitability from the labor share increase (Foley and Michl 1999, chapter 10).

In general, an increase in the labor share has two effects. First, as the propensity to consume out of wages is higher than that of profits, then consumer demand will increase, possibly stimulating investment too through the accelerator. On the other hand, if the change in consumption is small or takes place slowly, then, as the profit share declines, a *profitability crisis* will emerge and unemployment will most likely develop. It is possible that the changes in consumption and investment cancel out, but this would be a fluke. In general, investment responds more quickly and sharply to these events than consumption, although it is possible that delayed changes in the distribution of income may result in (positive) changes in consumption that dominate the decrease in investment, thus avoiding the problem. The second effect is that as prices tend to increase through the mark-up mechanism, they will become less competitive in international markets, *ceteris paribus*, thus lowering the trade balance. This is the offsetting effect. This indicates that the overall result on output of a redistribution of income towards workers is ambiguous and depends on which of the two effects dominates.

What occurs if the distribution of income shifts towards capital? This will probably lead to an increase in investment in the initial stages. However, a delayed shift in the distribution of income toward capital will induce a decline in consumption. Sooner or later there will be a mismatch between supply and demand since the increase in capacity due to the increase in investment will not be accompanied by an increase in consumption demand. This is a problem of lack of demand, or *underconsumption crisis*. Capacity utilization will

have to decline, then investment will be reduced, a decline in income will follow, and then of production and employment.[23]

The above discussion has two implications. First, that the relationship between the growth of *ulcs* and that of output may well be positive, at least for some time. And secondly, that it is not possible to talk about an economy's "competitiveness" without getting into the relationship between growth and its distributional implications. We can further delve on these issues by studying the implications of the mark-up equation (7). In growth rates (denoted by ^), that is, $\hat{P} = \hat{\tau} + \hat{w}_n - \hat{q}$, where $\tau = 1 + \mu$ and *q* denotes labor productivity ($VA / L$). An implication of this equation is that inflationary processes are the *consequence* of the struggle over the shares in national income. The rate of wage inflation relative to productivity (along with prices of imports and raw materials) is taken to be the most important determinant of price inflation in this framework. The struggle between capital and labor is expressed in the wage and price setting processes, the former used by labor, and the latter by firms, to influence their respective shares. The power of labor to influence nominal wages and the power of firms to pass on wage increases via the mark-up in the form of higher prices jointly cause inflation, with the monetary expansion merely allowing, and not causing, the expression of the conflict between the two classes. One again, discussions about competitiveness have an important income-distribution-struggle dimension.

In dynamic terms, the growth rate of the *ulc* is the sum of the growth rate of the labor share plus the growth rate of the ratio of exchange rates (in the case of equation (3)), i.e., $\hat{ulc} = \hat{s}^L + \hat{xr}$, where again " $\wedge$ " denotes a growth rate. Therefore, changes in *ulc* are the results of changes in these two components, the first one ($\hat{s}^L$) being the result of the dynamics of income distribution, itself the result of the shifts in the balance of power between the social classes and the type of labor market in the economy, as well as of the prevailing technological conditions; and the second one ($\hat{xr}$) being driven both by market forces and central bank intervention. From period to period, $\hat{s}^L \cong 0$ (Kaldor's 1961 stylized fact, also referred to as Bowley's law) except in periods of crises when important readjustments in the balance of power between labor and capital take place (Diwan 2001, 2002). This indicates that $\hat{ulc}$ will be mostly the result of $\hat{xr}$, i.e., $\hat{ulc} \cong \hat{xr}$. This is confirmed in Figure 7 with data for the Philippines.


FIGURE 7 ABOUT HERE


Often researchers are interested in comparisons between two countries. To this purpose they construct the so-called *relative unit labor cost ($rulc_j^i$)*, defined as the ratio of the *ulc* in country *i* to that in country *j*, i.e., $rulc_j^i = ( ulc_i / ulc_j ) = ( s_i^L \, xr_i ) / ( s_j^L \, xr_j )$, which in dynamic terms becomes $\hat{rulc}_j^i = \hat{ulc}_i - \hat{ulc}_j = \hat{s}_i^L + \hat{xr}_i - \hat{s}_j^L - \hat{xr}_j$.[24] If, as argued

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[23] Countries try to overcome underconsumption crises with measures such as the restructuring of production towards luxury consumption goods, more likely to be purchased out of increased profit income, or promoting exports.

[24] For empirical purposes, j's *ulc* could be computed as the average *ulc* of the country's trading partners (Fagerberg 1988, p.355, footnote 2).

above, $\hat{s}_i^L \cong \hat{s}_j^L \cong 0$, then $ru\hat{l}c_j^i \cong x\hat{r}_i - x\hat{r}_j$. This indicates that the observed changes in *rulcs* are essentially due to differentials in the growth rates of the respective ratios of the *PPP* to the market exchange rate (the price adjustment effect), more than to differentials in the growth rates of the labor shares (the pure unit labor cost effect). It is worth noting that if the $u\hat{l}c$ is declining because the $x\hat{r}$ is declining, it means that the exchange rate is becoming more undervalued. Of course one can argue that in this case the economy has become less competitive; but if this is all $u\hat{l}c$ (and $ru\hat{l}c_j^i$) reflects, certainly the construction and analysis of unit labor costs is a questionable endeavor.

It is important, finally, to contrast this paper's explanation of Kaldosr's "perverse" empirical findings with that of Fagerberg (1988). The explanation here is that differentials in *ulcs* across countries reflect the dynamics of class struggle to appropriate a higher share of output. It is not possible to ascertain what the relationship between *ulcs* and growth is because as the distribution of income shifts from one class to another, the economy swings between the possibility of underconsumption and profitability crises; and it is possible that higher labor shares lead (at least temporarily) to higher growth rates of output.

Fagerberg also argued that the popular relationship between *ulcs* and growth is much more complex because other variables have to be considered into the analysis, but his argument is different, and does not question the standard interpretation of an inverse relationship between both variables. He developed a model that related growth in market shares to the ability to compete in technology (measured in terms of technology indices), the ability to compete in price (measured in terms of *ulcs*), and the ability to compete in delivery (measured in terms of investment); and tested it using a simultaneous equation framework with data for 15 industrial countries for 1960-1983. Fagerberg concluded that differences in international competitiveness and growth across countries are mostly due to technological competitiveness factors and investment. On the other hand, relative unit labor costs, though statistically significant in the export and import equations and with correct sign, appeared to be a lesser factor. Probably Fagerberg calculated unit labor costs as follows: $ulc = \left[ \dfrac{w_n}{[VA_n \, / \, P \, ] \, / \, L} \right] / ER = \left( \dfrac{w_n L}{VA_n} \right) \left( \dfrac{P}{ER} \right)$. And then he divided each country's *ulc* by an average.[25] In any case, however Fagerberg calculated the *ulcs*, these have the interpretation of the labor share times a price adjustment factor.

As argued above, *ulcs* most likely are not significantly different among developed countries. Hence their growth rates cannot be much different either. This implies that this variable cannot be significant in explaining cross-country differentials in growth rates. Though one may find outliers, labor shares and the ratio of the price level to the nominal exchange rate, must be similar among this group of countries. Moreover, although the sign of the growth of the relative unit labor costs was correct in the export and import equations, Fagerberg's model also predicted the same perverse relationship Kaldor found for the same countries.[26]

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[25] At the beginning of his paper Fagerberg indicates that "relative unit labor costs (*RULC*) are *ULC* converted to an international currency and divided by the average ULC for the country's trading partners" (Fagerberg 1988, p.355, footnote 2). He also indicates that the source of this variable is the IMF and OECD statistics (Fagerberg 1988, p.373).

[26] De Benedictis (1998) also offers an alternative interpretation.

**5. CONCLUSIONS**
This paper has discussed the policy implications of unit labor costs. The main conclusions are as follows:

(i) Unit labor costs, the ratio of the nominal wage rate to output at constant prices, can be interpreted as simply the labor share in output, the pure *ulc* effect, multiplied by a price-adjustment effect. This reflection automatically links the notion of *ulc* with the functional distribution of income. This is not an innocuous observation: competitiveness, measured or interpreted in terms of unit labor costs, is not just a technical concept. It embodies the social relations that affect the distribution of income between the social classes.

(ii) This casts doubt on the traditional interpretation of *ulcs*, namely, that the lower the better (i.e., the more competitive the economy is). Once distributional considerations are brought into the picture, it is possible that a higher unit labor cost (i.e., a higher labor share) leads to higher growth rates in the context of a *wag-led* growth economy.

(iii) Kaldor's paradox, the empirical finding that the fastest growing countries in terms of exports and/or GDP in the post-war period have at the same time experienced faster growth in their *ulcs*, and vice-versa, is a not an anomalous or perverse result. Indeed, a higher labor share need not lead to a less competitive economy.

(iv) Differentials in *ulcs* across countries reflect the dynamics of class struggle to appropriate a higher share of output. In reality, economies grow along the knife-edge of income distribution.

(v) Following the logic of the concept of unit labor cost, one can define the notion of *unit capital cost*, i.e., the ratio of the nominal profit rate to capital productivity, as a measure of competitiveness. This way, one can argue that the lower the better, and thus shift the burden of competitiveness on to capital.

(vi) In the short-run, given that labor shares vary very little, growth rates in unit labor costs, as well as in relative unit labor costs, are mostly (and simply) the result of changes in the price adjustment effect. If this is all the information the notions of *ulc* and *rulc* convey, their calculation, monitoring and use becomes questionable in the traditional framework.

(vii) Calculating correctly unit labor costs is a very difficult task due to data problems. In fact, very seldom do authors report the original *ulcs*. Either they show them in index form (thus one does not know the original value), or in growth rate.

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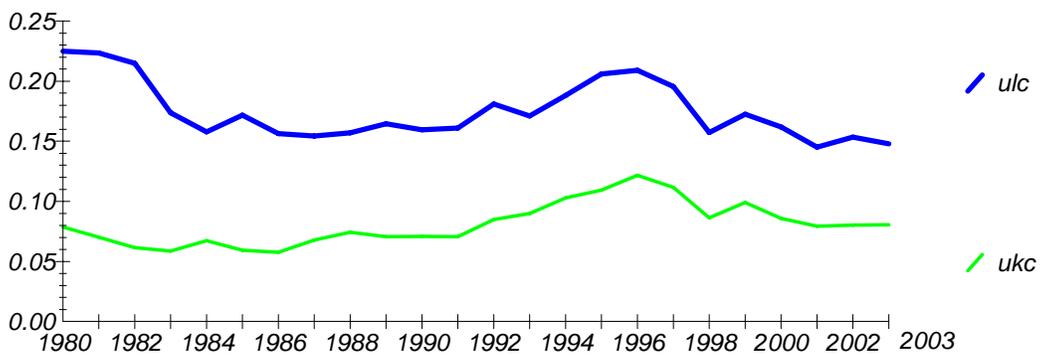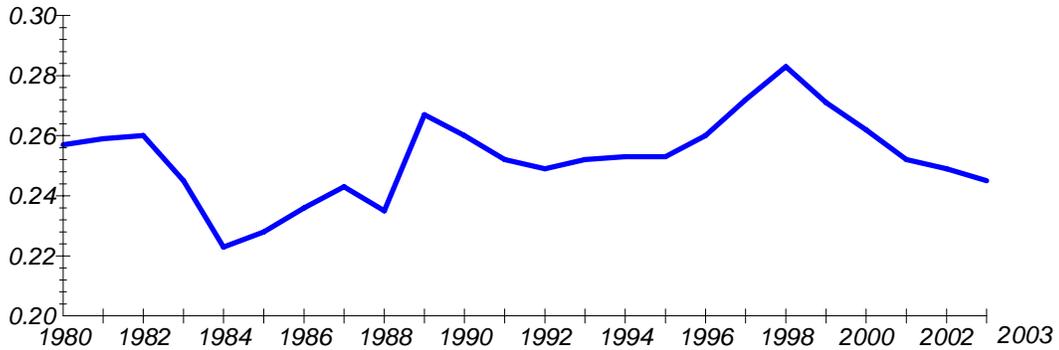
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## Figure 1. Labor Share Philippines
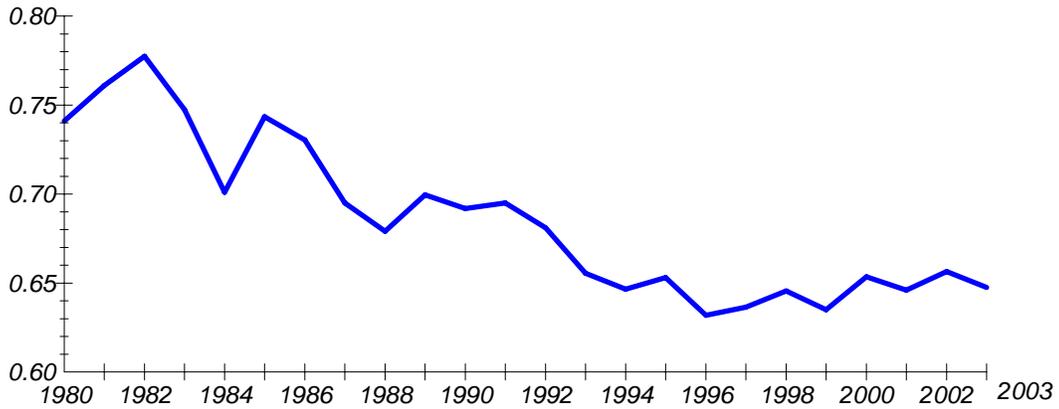


## Figure 2. Unit Labor Cost (ulc) and Unit Capital Cost (ukc) Philippines
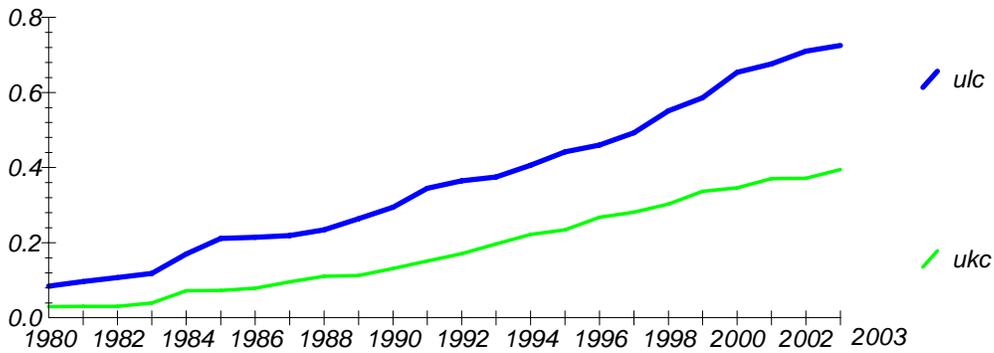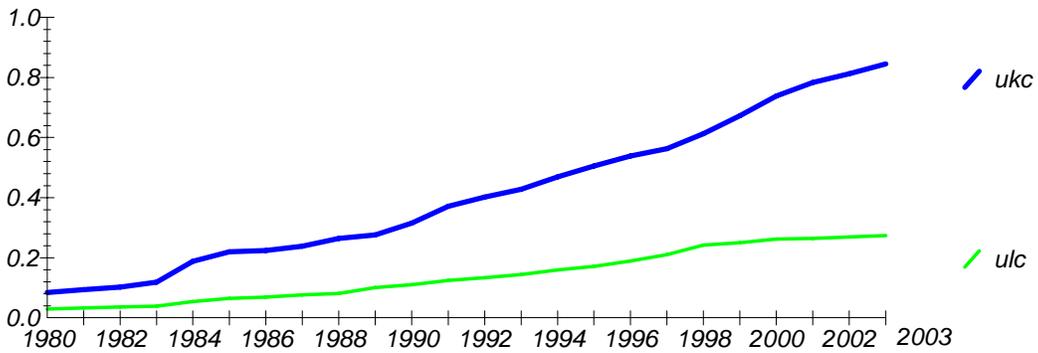


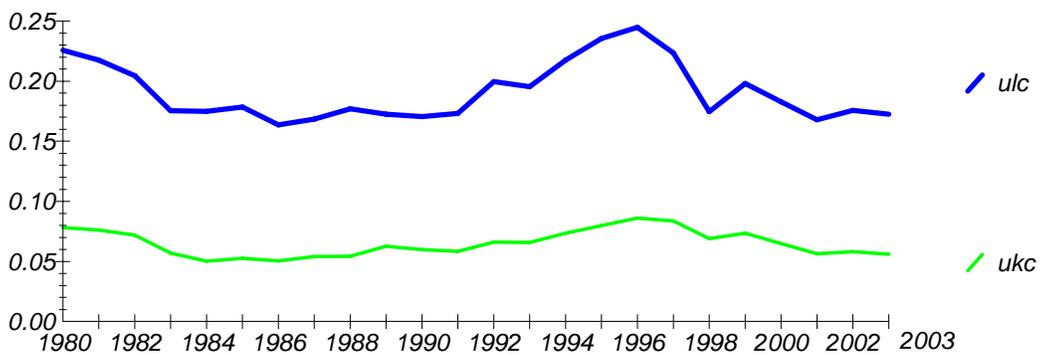## Figure 3. ulc and ukc Philippines with price adjustment effect xr

## Figure 4. Unadjusted Labor Share Philippines



## Figure 5. ulc and ukc Philippines with unadjusted factor shares



## Figure 6. ulc and ukc Philippines with price xr and unadjusted factor shares

## Figure 7. Growth Rates of ulc, labor share and xr. Philippines