

WAGE Workshop in Geneva at the ILO
(30.6-1.7.2016)
General Report

Our second workshop began on Thursday, June 30 at 14.00 and ends on Friday 1 July at 16.00. Six participants came from outside of Switzerland: Stéphane Callens (Artois / Arras), Pim de Zwart (Wageningen), Aomar Ibourk (Marrakech), Clement Sehier (Lille), Remzi Uctum (Paris West) and Michel-Pierre Chélini (Artois / Arras). The technical character of the workshop, the need to limit costs and the date in early summer have reduced the possibilities for participants to be present. On the side of the ILO, were Patrick Belser, Head of the *WAGE group*, Nicolas Maitre, who replaced Kristen Sobeck (ILO Buenos Aires) and is in charge of the *Global Wage Report* and Harvey Clavien, economist at the ILO's statistical department. Marc Bacchetta, from WTO and working inter alia on wages in international trade, joined us at Friday's lunch

We worked in a very nice room at ILO (No. VII) with a good forty seats, very well equipped. At Ferney-Voltaire, the participants coming from afar were staying in the same hotel, so allowing for continuation of conversations in the car or at breakfast and all participants took the time for a dinner together on the evening of Thursday 30th in a good atmosphere at the *Inn to Grand Saconnex*

0. Workshop summary and outlook following

1. The final target which could be aimed by Spring 2017: the evolution of several series (not a single series) over the period 1950 to 1990, both the real average wage, the male/female wage industry, the monthly/annual salary, the whole payroll, the minimum wage (e.g. in public service). Compare with GDP / capita.

Should be added to the actual wage series, context series such as unemployment or productivity (or life expectancy, level of education or HDI) then to be able to consider the possibility of econometric calculations

2. It would be good to start from a sample of important or representative countries: USA, Japan, France, Germany, UK, Italy, Sweden or Denmark, the Netherlands, Australia. India is possible, wage data exist and the statistical quality is undeniable, but their representativeness in 1950 as in 1990 remains limited (majority of agricultural workers, importance of unorganised sector). Africa e.g. would not be a good start, with too many gaps in the availability and reliability of data; or some examples like South Africa, Morocco, Egypt and / or Nigeria must only be considered. A real problem will arise for socialist economies, including countries like Russia or China. One could assume that the reference horizon is formed by the developed countries, to which intermediate countries for the period 1950-1990 (like Spain for example), the actual developing countries and the socialist countries converge or should converge. Subsequent series for socialist and developing countries would be built by retrospective gap (starting with the difference between socialist country situation / USA for example in 1990 and retropolation or backward-calculation, back in time to 1950) with the advanced countries

3. Methodology. The best would be to start from the ILO series since 1995 and back in time Sources: The series already published, to be harmonized in international dollars in 1990, or, if this is not possible for the entire sample, in national currency deflated for price increases and converted into an index.

. ILO sources are of two categories. On the one hand, annual directories of the ILO (which were, apparently scanned), on the other hand ILO archives themselves for the period 1950-1990 (documents received from governments and ministries of Labour, because everything is

not or cannot be published). Remember that the sources are different for different countries or types of countries (developed countries, former colonies, developing countries etc.).

. The US *Bureau of Labor Statistics* has done similar work, by adjusting by country and constructing a typology by source

. Missing data: apply the appropriate methods as defined by A. Ibourk.

4. Make an inventory of studies in specific national branches (such as Uruguay railways) to test contradictions in the series and, as appropriate, consider writing case studies for selected countries, associating demonstrative explanations with detailed statistical tables, to analyse the wage developments in relation to the whole country's economy and the international economic environment (growing mutual porosity of national economies)

-----Session 1-----

Definition of wages in the long run: problematics and methodology

Patrick Belser begins by welcoming participants to the workshop on behalf of the ILO.

1. Michel-Pierre Chélini (Arras): *General introduction to the workshop*

The workshop's goal is to raise all the methodological problems that could arise in the creation of a database compatible with that of the ILO and to start testing one of our five axes of research, the wages of migrants. The idea is to develop by February 2017 a first long-run statistical series from 1950 to insert it in our COST application.

The first three synthetic indicators are the target objective of the database:

➤ An *overall average wage* in constant dollars since 1950 or 1960 that could act as overall wage index; it would be built from national indices of sufficiently representative countries (USA, France, UK, Germany, Denmark, Sweden, Spain, Morocco, Malaysia, India, China, Uruguay, Russia etc.). It would consist of three complementary sub-series: the gross hourly wage, the net average annual salary and gross payroll (% of GDP). To complete: look at minimum wage, wages of young people (16-25 years, 26-35 years), women's wages and the poverty line. For subsequent econometric calculations, three additional data would render the best services: working time (hours), value added (GDP), which give together labour productivity (relation wages / productivity) and social costs (cost of labour)

➤ a *dispersion index of wages* ($D9 / D1$) by country, by continent and globally

➤ an *overall indicator of wage convergence*: Σ -convergence, reducing the dispersion of internal levels of income to national economies, β -convergence, bridging the gap between emerging and developing countries and developed countries

In case of default in the data, several solutions exist to approach the missing values:

. Specific salary surveys conducted in the country since 1950

. The legal minimum wage

. Salaries of public employees (often public service grids serve as central model to the private wage system)

. Wages in some highly organized sectors like: mines, railways, shipyards

. the GDP / capita, often very close to the net average annual salary (if payroll $\pm = 50\%$ GDP), can serve as a red thread in the analysis

2. Patrick Belser reminded the place of the *Wage group* that he leads, in the ILO's organizational chart and showed the website with the *Global Wage Report*, which represents their main work to the ILO DG. It quickly shows the indicators that the ILO provides, roughly since 1995, average salary, average wage / average productivity, labour or wage share in national income, wage inequality $D9 / D1$ and the average number of employees covered by a collective agreement. He mentioned as an example of a statistical problem the Russian data:

part of the wages are clearly paid under the table, which makes the official data collected very insufficient.

The LABORSTA data-base starts in 1969 (nominal average wage by activity) in national currencies, but with significant lacks (developing countries, socialist countries) until 1990-2000. In the archives the reports sent to the Conventions signatory countries can appear from 1924, but rather relate to industry wages and are often expressed as indexes, not in value. In case of default data, the ILO sometimes proceeds by extrapolation to productivity: ILO has to produce numbers and takes the most “effective” method, whereas sometimes it is better to provide a probable figure rather than no figure. Empirically, the ILO notes that productivity provokes a marginal effect on the salary, while the reverse effect is more efficient.

3. Aomar Ibourek (Marrakech): *Methods for handling missing data: Fundamentals and Applications*

The author started with the need to consider the quality of data mobilized, the difference in salary sources, the method of collection and in more cases than can imagine, spoke of the situation of multiple-activities by the same worker. Missing data can be complete or partial, requiring a re-weighting. The non-response rate (e.g. 7%) can be in random or non-random, which in part will guide the choice of treatment. The imputation of missing data can be simple (artificial values replace the missing data) or multiple (multiple artificial values replace the missing data).

Four groups of methods are used to handle missing data: deductive method, transposition method through other comparable surveys, regression model, hot-data. The allocation of data can be done by averaging, by ratios, by regression or by proxy¹.

The final choice made is based on the amount of missing data, their nature (nominal or discrete) and the reason for their absence. Indeed, the data error can be uniform in origin (constant probability), aleatory type missing at random (weight of auxiliary variables) or complex (mix more or less composite of both).

The analysis must take place by continent, by region (Africa, for example, is not a homogeneous continent), by quartile etc. Empirically we note a proximity between a completed sample (“reconstituted” missing data) and a complete sample.

4. From 16.00, we made the [visit to the ILO archives](#) with an assistant archivist who was very welcoming. The director Remo Becci made a brief appearance, returning directly from a two-week mission in Africa. We considered carefully the old archive handwritten directories on the shelves and the room that welcomes readers. Today all documents since 1945 are listed completely in the archival database (internal) of the ILO, which avoids the detailed examination of paper directories. The archives are open Monday to Friday from 9.00 to 17.00. Write or call ahead.

Of interest to our work

. The *Annual survey of salaries* in October, which began in 1924 and stopped in 2004 or 2008. In the Interwar-Period, the response rate is limited because the documents preserved show only two boxes for the period 1924-1939

. The *Yearbook of Labour Statistics*, which began in 1932. It contains a page of sources and methods. Every year, especially after 1945, it offers a series of wages for (most of the) country, but sometimes in hours, sometimes in days, weeks or months, exclusively in national currency (converted at the exchange rate) for some sectors (overrepresented industry, underrepresented agriculture). Harvey Clavien promised to ask, because if we find the whole

¹ Eekhout, I, de Boer RM, Twisk JW, Heymans MV, “Missing data: a systematic review of how they are reported and handled”, *Epidemiology*, 2012 Sept. 23(5), p. 729-32

collection certainly at the National Libraries of our respective countries (they do not come out), he thinks that a whole scan was undertaken in PDF format and may be available to us. A survey of 1952 shows e.g. about a hundred pages on wages (the others pages concern working hours, working conditions, etc.)

. *Specific surveys* could be identified in the database: “Agricultural wages in the Philippines 1950-1975” for example.

. A report on the minimum wage was written in the last few years, with reference to historical series. F. Eyraud, C. Saget, *The fundamentals of minimum wage fixing*, Geneva, ILO, 2005, 141 p (online)

. Are also included by country are some files of correspondence pertaining to the collection of data undertaken by the ILO, also about the statistical methodology, but these files do not have (always) statistics.

session 2

Database construction experiments and convergence analysis

5. Pim de Zwart (Wageningen University, Netherlands), *Real wages since 1820, conclusions of statistical methodology on wages in long-time*

With Bas Van Leeuwen and his wife, they built an index of well-being based on real wages since 1820 globally. This work took him a year full time in the framework of an agreement with the OECD. The method was to elaborate a basket of goods to ensure the subsistence of the labourer, defining in a certain way the poverty line (Allen, 2009), with a minimum intake of calories and protein per day. This basket of goods regarding the unskilled wage in the building sector, an industry both widespread in space and continuous in time (the authors are aware of the technical changes). The content of the basket is not the same in the selected regions and the number of countries increased from fifty in 1950 to over 80 in the 1990s

Data are available on the portal www.clio-infra.eu/ Clio-Infra, an international network of economic historians that collects data on the different facets of the evolution of the world economy between 1500 and 2010. They extend and use Allen’s work on the evolution of real wages since the Middle Ages, the *Colonial Blue Books* (1840-1912) of the British Empire and the ILO October survey since 1924.

The problems presented themselves in great numbers:

- . The availability of a minimum wage and a maximum wage for the group (differences between companies, types of projects, regions etc.), has forced an average to be calculated
- . Changes in modes of consumption: as the basket was the same by convention, it could be difficult e.g. to find prices of candles in recent periods
- . Hours of work, a real headache: some sources gave the number of days a year, other an hour a day etc. The convention chosen was 250 days a year, which is reasonable
- . Family size is variable (the labourer has to “feed his family”)
- . The representativeness of the building industry labourer changes over time and across countries
- . Regional variations in available data are sometimes significant: they had information on salaries only on workers of a single city or big cities, rarely for rural workers.

Trends in all standard regions of OECD increased, especially after 1950, with a clear lead in the Anglo-Saxon colonies such as USA, Canada or Australia (*Western off-shoots*). The curves (see powerpoint) also depend on the level of real prices (which are lower in the off-shoots) and the volume of the population (1980-2000 figures from the Southeast Asia seem too close to those of Africa). Africa and Asia are around the minimum subsistence level long into the century, at least until 1950-60.

The skill premium can be calculated by comparing the wages of the labourer and that of the artisan (craftsman) in construction. In 1820, the craftsman's wage rate is twice that of the labourer, in 2000, only about a third (38%).

The gender wage gap has decreased worldwide since 1950, it is estimated according to method chosen, to average 20% in 1950 and 5% in 2000.

The correlation between real wages and GDP / capita is very high, in the range of 0.6 early in the period and 0.95 at the end of the period.

The subsequent publication of objectives and current research revolve around four or five themes: improving the data-base with more price data to power a basket-generator, MOATSOS, deploy series of wages for 42 occupations (sectors) and for different skill levels, dig the issue of the gender wage gap and the involvement of women and children in the labour market, refine the question of hours of work and regional differences, assess the share of wages in household income.

Towards the end of the presentation, Pim described also some comparable (economic historical) databases (see accompanying sheet)

6. Remzi Uctum (Paris-Ouest): *Convergence wages and of their macroeconomic determinants in the Euro area*

With Georges Prat (Paris Ouest), they try to work on macroeconomic determinants of wage convergence in the euro area (acceleration or deceleration), more than on the convergence itself. The theory of optimum currency area (OCA) from Mundell in the late 1950s indicates that the main preconditions for the formation of an OCA is a high mobility of capital and labour, real wage flexibility and tax integration. There are however no prerequisites for convergence. Countries that are not initially able to join an OCA may well gradually adapt itself after having joined it.

Literature considers favourably the reduction in wage differentials between European countries because of market competition, migrations or the introduction of the euro². The authors will specifically check whether the establishment of the euro has or has not accelerated the convergence of wages. For Mora et al (2005), the introduction of the euro does not exercise an accelerator effect in terms of wage convergence.

The macroeconomic model chosen for determining salaries is the WS-PS model that provides an easily implementable framework. The methodology for the convergence of detection for each determinant can use cross-analysis tests (cross-section) or time series tests, based on the assumptions set on the stationary state³. In the model, under the assumption of decreasing marginal productivity of labour and profit maximization by firms, appears first an equation of real wage offered by companies (PS); a second equation (WS) defines the desired real wages by employees - wages that increase with the reservation wage and decline with unemployment. The link between the two equations brings out a coefficient k of the balance of power in negotiations between employers and employees

The independent variables used in the model are: the consumer price index (CPI), the index of producer prices (PPI), the employers' social contributions, the social contributions of employees, corporate gross margins, hourly labour productivity and unemployment. Data are

² Among some works on the period before the introduction of the Euro: Jung and Doroodian (2001), *Convergence in manufacturing labour costs due to wages*, Andersen et al (2000), *Convergence of nominal wages*, and on the period before and after introduction of Euro, Mora et al (2005), *Convergence of nominal wages*

³ In systems theory, a system or a process is in a steady state if variables (status variables) that define the behaviour of the system or process are immutable over time. In continuous time, this means that for the system properties p , the partial derivative with respect to time is zero and remains as such

available from the ILO series, Eurostat, OECD (*Economic Outlook*), and Thomson Reuters Datastream.

The two colleagues are considering two convergence-tests of series: cross-sectional tests and time-series tests (Bernard & Durlauf, 1996)

At the end of the presentation, participants raised several issues, including whether one should not distinguish in the model some European subsets specifically Northern Europe (around Germany).

[6b] Harvey Clavien (department of ILO statistics) presented us with some element of the website ILOSTAT. The first LABORSTA database, which began in 1969 did not count all countries and worked on twenty indicators. ILOSTAT that replaced this and incorporated LABORSTA has extended to 90% of the countries of the world since the 2000s and develops a hundred indicators. The accessibility to the website is not always easy. The ILO members mentioned that in the *Global Wage Report* (first edition 2008), they encounter a series of situations with missing data. They do not publish them, but can communicate the information to us.

[6c] At the ILO restaurant, Marc Bacchetta of the WTO, who knows our group through Hubert Escaith, WTO Chief Economist, took the lunch with us and our discussion continued during the meal. In particular, he took part in a group working on the relation between trade and wages. The file is tricky: everyone knows that wages are an obvious component of world trade, but at the same time, the strategies of international organizations such as the WTO (attached to free trade) and the ILO (attached to the decent work) are not identical, or even contradict each other. So the ILO tends to consider wages as within its exclusive competence, which explains the cyclical nature of the functioning of WTO wage working group, rotating actively at times (two or three years ago), then a passive period, before being revived now.

The WTO must prepare a report for the end of 2016 on the skill premium (bonus effect to qualified people). Overall said, and according to many studies, one can say that globalization is favourable to qualifications; it increases the “bonus effect” for qualified employees. The only exception in the last ten-fifteen years, remains Latin America, where the premium seems to diminish. Two explanations are advanced for this “anomaly”: the qualification of the workforce grew earlier, in the years 1980-2000 when states had pushed their population to do more studies (according to human capital theory) and previous inequalities (in the 80s) were very high, so they can only decrease. We talked about many other topics, such as with Clement Sehier on China and its salary data. The contact is good and we are considering further cooperation when our respective work will be advanced

session 3

- . Database experiences and methodological issues (suite)
- . Initiation of a research axis: migration and wages

7. Stéphane Callens (Arras): *Wages and international migrations (Europe/UE)*

One can start from the gravity model of Korzeniewicz et al. (2016) on global data: it gives a maximum value for the probability of migration when the income of the country of departure is 40% of the income of the country of arrival. This could explain the role of intermediary countries (Lebanon, Mexico). The literature on the subject is poorly developed⁴. The WTO is betting on a “managed globalization”, combining economic openness and social progress. The coordination of trade policy with other policies can be carried out through firm,

⁴ Sophie Meunier, Wade Jacoby, *Europe and the Management of Globalization*, Routledge, 2010

state or international institutions (WTO). Trade and migration register a parallel evolution; Migration of people are similar to a geographical shift of the work performed. Trade or mobility in the Heckscher-Ohlin model are either mutual substitutes (under the condition of equalization of factor prices) or complement each other. E. Helpman (2015/16)⁵ proposes a typology of businesses, assuming a free trade agreement without labour mobility; the benefits are uneven over the country endowed of an immobile workforce, first favouring employees of a first circle of exporting and diversified businesses in several markets, then employees of simply exporting corporations, and finally manpower of the purely local firms

Three typical situations of countries can be distinguished

- . Diaspora-countries: migration leads to lower or maintain a low level of domestic wages (Docquier effect, migrants are more skilled than the average in the local labour), see LDCs.
- . Home diaspora countries like Lebanon. High level of training of the national workforce and reception of migrants (Syrians) led together to the departure of skilled workers.
- . Immigration countries: in most studies, the impact in terms of wages is positive for migrants and on the host countries. See coastal China

8. Clément Sehier (Lille): *Reliability and comparability of data, the example of the Chinese statistics*

The paper was written in collaboration with Muriel Perisse (Arras) and Elsa Lafaye Micheaux (Kuala Lumpur / Rennes).

In terms of methodology and concepts, researchers face a real shortage of labour statistics in China. This is a politically sensitive issue, reinforced by the trauma of Tiananmen (1989), which threatens to power up events connected with wage demands and that could lead to a collapse of political regime. Real political control on statistics is still exercised in the country

Technically, the statistics collection is inherited from a planned economy; information is aggregated from companies that make up and send their data to the central ministries. Despite the post-1992 reforms, the legacy of the Maoist period has not completely disappeared. Three main sources are distinguished:

- . *The Labour Reporting System*: this is the main source, developed by the National Bureau of Statistics; it is found in the China Statistical Yearbook; it distinguishes two subsets, the public sector and the private sector; it inventories the data from all firms of over 100 employees, 10% of companies with 20 to 99 employees, but any of less than 20 employees. Four biases can be noted: non-inclusion of small SMEs and very small firms, an incentive to understate the level of employment (which reduces payroll taxes), the collection of data via the only businesses (without cons-expertise) and the exclusion of self-employed and informal workers, or 30% of total employment.

- . The *Labour Survey* also developed by the NBS, but running per sample; it is inspired by international standards, comparability is improved, but provides little information on wages.
- . Data published elsewhere by the government or its agencies.

In the long run, Chinese statistics present real obstacles to comparability. The 1949-1980 series is very heterogeneous, patchy or non-existent. If the series has to begin in 1950, the industry was underdeveloped in China at those times, increasing considerably the weight of rural wages in the payroll. Moreover, the system of production units (*danwei*) that frames not only work, but society and the return on assets, created a sub-system of collective wages (with a significant socialized share), difficult to integrate into series of individual salaries. From the 1990s, an individualized and capitalist employment relationship has been developed, which

⁵ E. Helpman et al, "Trade and Inequality, From Theory to Estimation", *Review of Economic Studies*, March 2016, online

was accompanied by a rapid rise in wages since the 2000s, but is it not a kind of compensation for loss of “collective benefits” (social wage)?

In terms of the contribution to WAGE, there are four axis of research in the Asian sub-group:

- . The macro-historical contextualization of wages history since 1950
- . Detailed analysis by industry, scoping predominantly on the role of women, youth and migrant workers.
- . The significance of rising wages contemporarily in Asia: is there a convergence in Asia? Asia is catching up with the older industrialized countries? What is the influence of global production networks on Asian wages?
- . Case studies at company level, such as the SCORE programme of the ILO in Beijing

9. Rémi Devemy (Arras): *Methodological example of a long series of wages over the period 1960 to 1980 (chemistry France / Belgium / Germany)*

Unable unfortunately to travel to Geneva, R. Devemy wrote a very detailed paper. Here are the main dimensions. The author has written a master's thesis in 2009-2011 on unions in the chemical industry in Northwest Europe (Nord-Pas-de-Calais, Wallonia and North Rhine-Westphalia) and their 1960-80 wage strategy; he reconstructed a long series of wages in this industry. He first collected data from international and national statistical yearbooks. An “average gross hourly earnings of workers” was developed by Statistical Office of the European Communities about the working population (manual workers represented 68% of all employees in the Belgian chemical and West Germany in 1960). Bringing together the figures of national institutes, OSCE incited from 1958 the countries members to some harmonization of collection and methods of operation, but this harmonization did not become effective until the late 1970s when the (manual) workers represented less 50% of employees

This inquiry asked several significant methodological problems.

- . The definition of the “standard worker” was not the same between 1950 and 1980. The model determined by the OSCE, inspired by the German Federal Statistical Office, for example integrated the master (*Meister*) among ‘manual workers’, while the French Statistical Office (INSEE) included this level of staff responsibility among non-manual ‘employees’.
- . A number of missing data was supplemented either by an average data equidistant between two available statistics or by reference to an average or a trend to another level. The good parallelism between the federal German data and those of the North Rhine-Westphalia alone encouraged the same proportional analogy to be applied between the whole of Belgium between 1960 and 1971 and the Wallonia alone. The resulting statistical key-table of the research is a combination of raw data (collected directly in the source) and estimates (25% of the table data) at various levels: the probable trend (based on various factors), equidistant data (to smooth the evolution of the curve) and reproduction of the trend nationally observed
- . The choice of the dollar. Before the introduction of the ECU, European Currency Unit (1979) and the launch of the euro (1999), wages were provided in national currencies. Eurostat then rebuilt retrospective series on the basis of the ECU but without explicitly giving the conversion rate. Therefore, the wage expression in dollars seemed to be a good compromise, despite the instability of this currency in the 1970s.
- . The purchasing power. Salary levels should also be assessed in the light of the purchasing power that they provide. The price of goods or rents in large cities is higher than in small. New tools such as PPP or the Geary-Khamis dollar could give an improvement to the series.
- . Hours of work: earning 8 dollars an hour does not have the same value for a French worker working 35 hours a week as for his Belgian neighbour compelled to work 38 hours.

. The nomenclature of activities. Developed in 1961 to 1963, the Nomenclature of Industries of the European Communities (NICE) divided the chemical sector into three groups (rubber, plastics and synthetic fibres; chemical industry; petrochemicals), while in 1961 France had more than six classes and Germany two. The question is not secondary: petrochemicals and pharmaceuticals remunerate better than rubber

After reconstitution and these multiple calculations and conversions, the resulting series provides an uneven relevance, according to the general knowledge of the evolution of the chemical industry. The 1970s was marked, of course, by “runaway” (more or less plausible) remuneration but also by an increasing gap between regions that the series expressed in a rather exaggerated way. The comparison with the dollar or the ECU does not give exactly the same results. Taking the reference to France, we find that the wage gap with its German and Belgian neighbours is undervalued in the data produced. However, the evolution of these inequalities follows a similar pattern in both cases.

It is also difficult to find quantitative information for the wage difference between workers and employees, the pay inequalities between men and women and all forms of dispersion: by occupation, sub-sectors or regions: in 1969, the standard deviation of regional hourly earnings in the chemicals compared to the national average was 0.75 DM in west Germany (US \$ 0.20) and 1.34 FF in France (US \$ 0.24)

End of the workshop to 16.00. All participants seemed satisfied with the exchange and the promising nature of the work that lies ahead