The compilation of construction price indices

Ukraine February 2012

Background

Construction Price Indices

- Construction Price Indices are difficult
- The methods followed can vary significantly across countries
  - From "model" pricing to "modelling" using the correlation between direct costs, other overheads & profit
- There was an attempt to introduce a standardised approach in the International Comparison Programme
  - But not entirely relevant, was not
    - A price index over time
    - Fully accepted by all countries/regions

Construction Price Indices

- Fixed margin estimates are to be avoided
- They vary over time - with going into and coming out of major cycles, just when you need accurate measures.
- Start with estimates of detailed production costs for well-described component features of model buildings and get data collection forms to give data on this over time.
- The problem is that a strategy is required for obtaining information on margins.

Construction Price Indices

- The strategy is to avoid respondents providing off-the-cuff data
  - Ask for detailed information on margins.
  - Not just ask for margins on the buildings, but to make the respondent think about what goes into a margin
  - Get estimates for the components of the margin
    - Perhaps ask the firm to comment on why it, say, remains constant or is increasing or falling over a certain amount, or is deviating by more than a certain amount from other items sold.
- This is costly in both respondent and statistical office time, but…….is the best way to get good data

Construction Price Indices

- Indices should include only work associated directly with building construction activities
  - By definition, outputs such as preconstruction site preparation work, post-construction landscaping or reclamation work, architectural fees, and building design fees are not in scope
- The basic steps in non-residential building construction index methodology
  - Step 1: Establish model building specifications
  - Step 2: Select survey respondent samples
  - Step 3: Select building assemblies for pricing
  - Step 4: Obtain monthly price updates

Construction Price Indices – The US Bureau of Labor Statistics (BLS)

- The issue - how to price outputs in a Laspeyres index framework?
  - The output of the non-residential building construction sector is heterogeneous and takes months or years to produce
- BLS use a methodology in which building models are developed and specified to represent the particular building type being constructed in the marketplace.
  - For example, multiple warehouse models were developed to accommodate regional variations in warehouse building design.

Construction Price Indices – The US Bureau of Labor Statistics (BLS): multiple warehouse models

- The building models are described as a series of unique production elements or "assemblies" in BLS terminology.
- Each building assembly represents a building construction activity that can be fully defined as a unique portion of the total project.
- Each assembly is made up of unit price components that define the specific type and quantity of materials, labor, and equipment necessary for the assembly’s installation

Construction Price Indices – The US Bureau of Labor Statistics (BLS): multiple warehouse models - an example for the slab on grade (floor) assembly for a BLS warehouse model building.

Activity	Description	Quantity	Measure	Material cost	Installation cost	Total cost
Assembly	Slab on grade, 5" thick, heavy industrial, reinforced	37,500.00	S.F.[1]	$87,987.12	$87,871.04	$175,858.15
Unit	Fill, gravel fill, compacted, under floor slabs, 4" deep	37,500.00	S.F.[1]	$5,625.00	$3,586.73	$9,211.73
Unit	Fine grade area to be paved with grader, small area	4,125.00	S.Y.[2]	$0.00	$8,043.75	$8,043.75
Unit	Expansion joint, premolded, bituminous fiber, 1/2" x 6"	8,250.00	L.Y.[3]	$3,135.00	$4,400.00	$7,535.00
Unit	Forms in place, slab on grade, edge forms, to 6" high, wood	1,125.00	L.Y.[3]	$454.62	$1,362.30	$1,816.92
Unit	Welded wire fabric, sheets, 6 x 6 - W2.1 x W2.1 (8 x 8), 30 lb/CSF	375.00	C.S.F.[4]	$3,532.50	$5,688.39	$9,220.89
Unit	Concrete, ready mix, regular weight, 3,500 psi	562.50	C.Y.[5]	$39,093.75	$0.00	$39,093.75
Unit	Curing, sprayed membrane curing compound	375.00	C.S.F.[4]	$1,942.50	$999.16	$2,941.66
Unit	Placing concrete, including vibrating, slab on grade, 4" thick, direct chute	562.50	C.Y.[5]	$0.00	$4,626.54	$4,626.54
Unit	Finishing floors, monolithic, machine trowel	37,500.00	S.F.[1]	$0.00	$13,003.64	$13,003.64
Unit	Finishing floors, granolithic topping, 1:1:1-1/2 mix, 1" thick	37,500.00	S.F.[1]	$10,672.50	$33,130.43	$43,802.93
Unit	Finishing floors, hardener, metallic, heavy service, 1.0 PSF, add	37,500.00	S.F.[1]	$22,500.00	$11,003.08	$33,503.08
Unit	Building paper, polyethylene vapor barrier, standard, .006" thick	37,500.00	S.F.[1]	$1,031.25	$2,027.03	$3,058.28

Construction Price Indices – The US Bureau of Labor Statistics (BLS)

- A professional cost-estimating firm developed the building models
- To achieve an output price, BLS
  - Combines the detailed material and installation (labour & related equipment) cost data
  - Updated quarterly by the cost-estimating firm
  - With margin (overhead and profit) data collected monthly by BLS directly from building construction contractors.
- BLS then aggregates output price changes captured at the assembly level each month to represent the change in output price for the total structure.
  - The output indices measure changes in the input costs for these structures plus the change in contractor mark-ups.

Construction Price Indices – The US Bureau of Labor Statistics (BLS)

- When the model specification step is completed, BLS
- Selects a sample of survey respondents to provide overhead and profit percentages that are applied to the cost data obtained from the cost-estimating firm
- General contractors areasked to provide an overhead and profit figure for managing the project and to provide overhead and profit percentages for any assemblies that the firm

Construction Price Indices – The US Bureau of Labor Statistics (BLS): when the model specification step is completed

- BLS selects a sample of survey respondents to provide overhead and profit percentages that are applied to the cost data obtained from the cost-estimating firm
- BLS asks general contractors to provide an overhead and profit figure for managing the project and to provide overhead and profit percentages for any assemblies that the firm would typically install
- To select the assemblies that trade contractors price, BLS identifies which trade would install each of the 50-plus assemblies that are included in each model
- BLS requests that each participating trade contractor provide overhead and profit figures for up to four assemblies that the firm would install in the specified warehouse.
- The region in which each firm is based determines which warehouse model BLS uses for obtaining the requested overhead and profit information from that firm.

Construction Price Indices – The US Bureau of Labor Statistics (BLS)

- Each month, survey respondents receive a pricing form for each assembly for which the firm has agreed to provide an overhead and profit percentage
- The form includes the current quarter's estimated costs for materials and installation (labour and related equipment), the assembly description, a general description of the warehouse, and the most recent overhead and profit figures provided by the respondent
- Actual transaction prices are not requested
  - BLS asks survey respondents to submit the overhead & profit figures they would add to the estimated cost information if their firm were to submit a bid for this warehouse project in the current month

Construction Price Indices – The US Bureau of Labor Statistics (BLS)

- BLS instructs respondents to consider the normal factors that affect their bidding decisions, such as their firm's current level of work inventory, project complexity and size, and prevailing economic conditions
- Each month, BLS asks the firms to consider these factors anew when submitting their current overhead and profit figures

Construction Price Indices – The US Bureau of Labor Statistics (BLS): updating of model

- BLS updates the building models every 5 years, according to the process outlined earlier
  - In the intervening years, the vendor will make adjustments to the assemblies in the models as shifts in construction practices dictate
  - BLS attempt to make quality adjustments for these changes
- BLS intends that the indices reflect price changes associated with the current materials & construction techniques used in the marketplace to construct the targeted structures
- Similar approach used for other construction e.g. School building, offices

Construction Price Indices – current practice in Ukraine

- Currently

“calculates a price index for construction & installation work (IP CIW) based on "the resource and technology models of facilities-representatives (25 models) by economic activity and types of building and structures“

- Elaboration required

End of Presentation