

# Fertility in Asia and Latin America: Motives and Means

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Havana November 2010

Trabajo presentado en el IV Congreso Internacional de la Asociación Latinoamericana de Población (ALAP), La Habana, Cuba, 16 al 19 de noviembre de 2010.



Questions addressed in this presentation:

- Asian and Latin American declines: what are the sources of decline?
- What is the situation at present (after 2000)?

Throughout this presentation, the distinction between *wanted* and *unwanted* fertility will be fundamental

Will rely on demographic survey data, which limits coverage historically and geographically

## Main Points

- Past efforts to attribute fertility change to *changes in fertility desires vs. changes in implementation of desires* have been flawed
- Both the Asian and the Latin American fertility declines were driven more by reductions in unwanted fertility rates than by changes in fertility desires
- At present, success in implementing fertility desires remains far from 100% – *unwanted fertility*, and *unrealized fertility*

# Background

## Total Fertility Rates

	<u>1960-65</u>	<u>1975-79</u>	<u>1990-95</u>	<u>2005-09</u>
<u>Asia</u>	5.5	4.0	3.0	2.4
Southeast Asia	6.2	4.8	3.1	2.3
South Asia	6.0	5.2	4.0	2.8
<u>Latin America &amp; Caribbean</u>	6.0	4.5	3.0	2.3
South America	5.7	4.3	2.9	2.2
Central America	6.8	5.4	3.5	2.4

Source: United Nations 2009

My aim is to understand defining features of these two declines, specifically the relative contributions of:

- changing fertility desires
- improved success in achieving fertility desires

Rationale?

- speak to current debates about population policy in Africa and S. Asia
- understand our past

This aim requires measures of fertility desires

====> must use survey data

## Survey Data: WFS, DHS, RHS

<u>Asia</u>	<u>Dates</u>	<u>TFRs</u>		<u>Latin America</u>	<u>Dates</u>	<u>TFRs</u>
Indonesia	1976, 2007	4.3, 2.6		Bolivia	1989, 2008	5.0, 3.5
Philippines	1978, 2008	5.1, 3.3		Brazil	1986, 2006	3.4, 1.8
Thailand	1975, 1987	4.3, 2.2		Colombia	1976, 2005	4.5, 2.4
				Ecuador	1979, 2004	5.2, 3.2
Bangladesh	1975, 2007	5.6, 2.7		Paraguay	1979, 2004	4.9, 2.9
India	1993, 2006	3.4, 2.7		Peru	1977, 2004	5.3, 2.5
Nepal	1976, 2006	6.1, 3.1				
Pakistan	1975, 2006	5.9, 4.1		Dom. Rep.	1975, 2007	5.4, 2.4
				El Salvador	1985, 2003	4.2, 2.8
				Guatemala	1987, 2002	5.5, 4.3
				Honduras	1996, 2005	5.0, 3.3
				Mexico	1976, 2003	6.6, 2.6
				Nicaragua	1992, 2006	4.5, 2.6

**Note:** Reference period is 36 months preceding survey. Calculated by author.

# Research Question

To what extent are fertility declines “demand-driven” – i.e. due almost entirely to reduced demand for children?

Suggests decomposition of fertility decline in terms of:

- *changes fertility desires* – changing structure of demand
- *changes in fertility rates* according to type of demand

## Decomposition, I

A simple decomposition that is common in the literature uses the simple identity:

Let  $b^w$  wanted births  $b^u$  unwanted births  
 $e$  woman-years exposure

$$wTFR = b^w / e = \text{“Wanted TFR”}$$

$$uTFR = b^u / e = \text{“Unwanted TFR”}$$

Then:

$$TFR = wTFR + uTFR$$



We can carry out this decomposition on inter-survey fertility in Asia and Latin American during the past 3+ decades

Selection rule for surveys:

- at least 8 years apart
- decline in total fertility rate [TFR]  $> 0.05$  births/annum

Note that countries vary in:

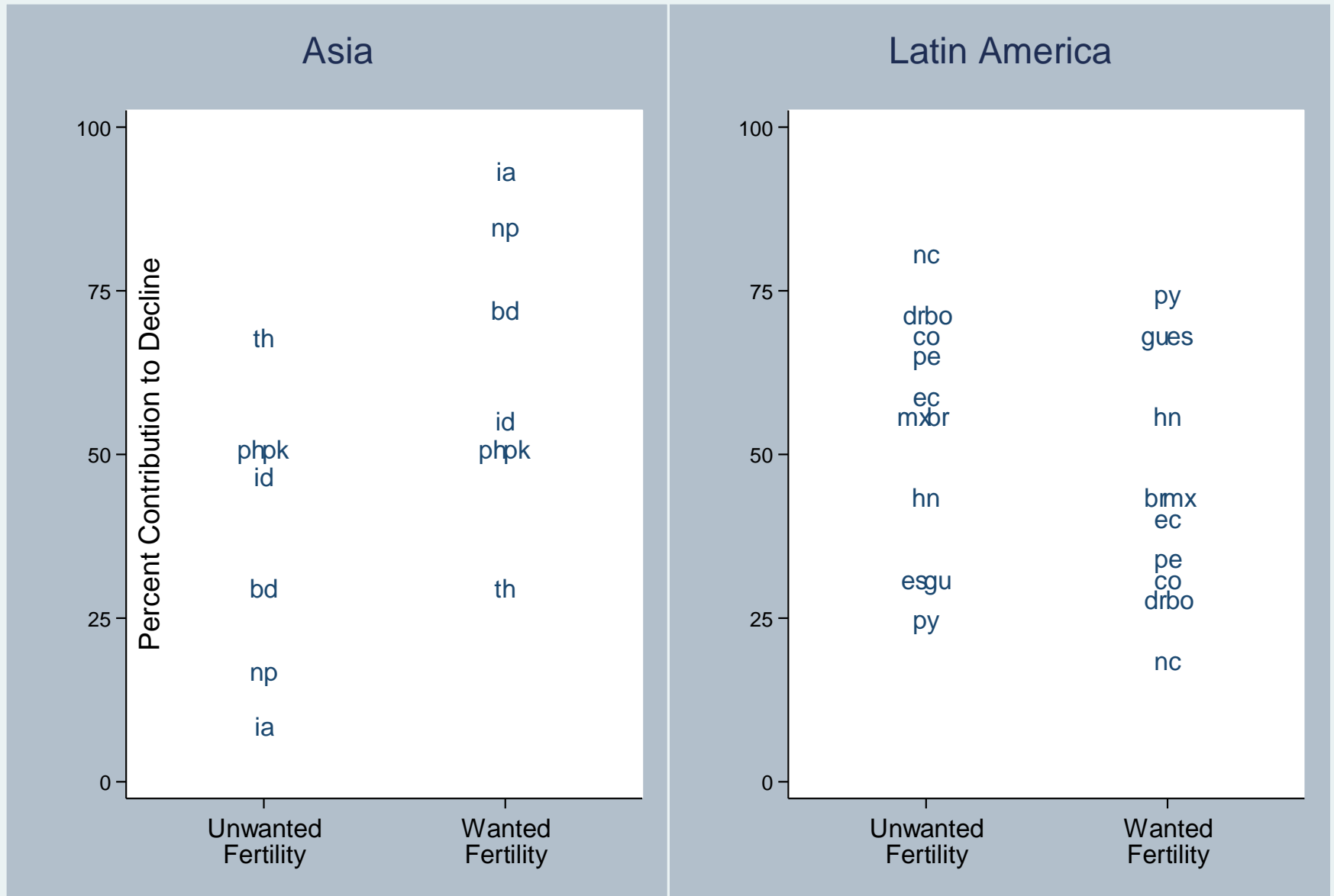
- stage of fertility decline under observation
- length of inter-survey period (and corresponding amount of decline)

**Note:** I use Casterline – el-Zeini (2007) estimates of unwanted fertility

Conventional estimators (DHS) are known to be biased downward

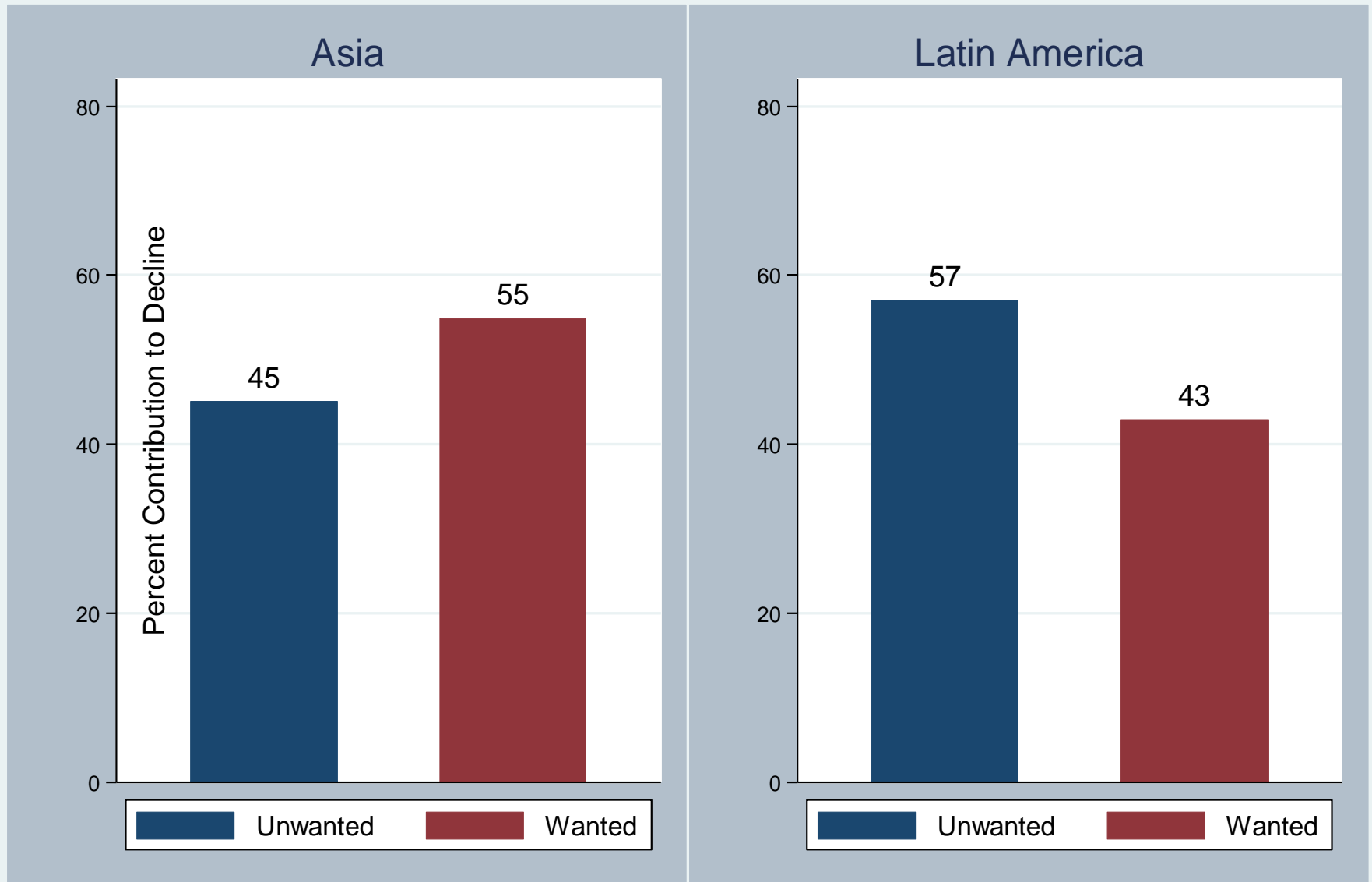
Casterline – el-Zeini (“aggregate prospective estimator”) generally produces higher estimates of % births unwanted, and therefore higher estimates of unwanted fertility rates

# Two-Component Decomposition of Fertility Decline



# Two-Component Decomposition of Fertility Decline

## Median Contributions



## Alternative Specification

But there is a serious problem with this decomposition for the purposes of understanding the sources of change:

fractions *at risk* of wanted and unwanted births can change as fertility declines

====> change in composition is confounded with change in behaviors (rates)

A more appropriate fertility model would distinguish:

- proportion at risk of wanted or unwanted birth
- rates of childbearing among those at risk of wanted or unwanted birth

## Alternative Specification (cont)

Let  $b^w$  wanted births                       $b^u$  unwanted births  
 $e^w$  exposure, “want”                       $e^u$  exposure, “do not want”

Then  $r^w = b^w / e^w$                        $r^u = b^u / e^u$

And let  $p^w = e^w / e$                       proportion exposure “want”  
 $p^u = e^u / e$                       proportion exposure “do not want”

Then  $f = r^w * p^w + r^u * (1 - p^w)$

This is a three–element expression for the age–specific fertility rate

## Alternative Specification (cont)

$$f = r^w * p^w + r^u * (1 - p^w)$$

This is the basis for a decomposition with three components:

- fertility rate for women wanting more children [ $r^w$ ]
- fertility rate for women wanting no more [ $r^u$ ]
- proportion of women wanting / not wanting [ $p^w$ ]

Change in fertility between two dates can be attributed to each of these three components

## Alternative Specification (cont)

$$f = r^w * p^w + r^u * (1 - p^w)$$

This is more useful as a behavioral model:

It distinguishes:

- Childbearing desires – proportion wanting more [ $p^w$ ]
- Actions flowing from those desires [ $r^w$   $r^u$ ]

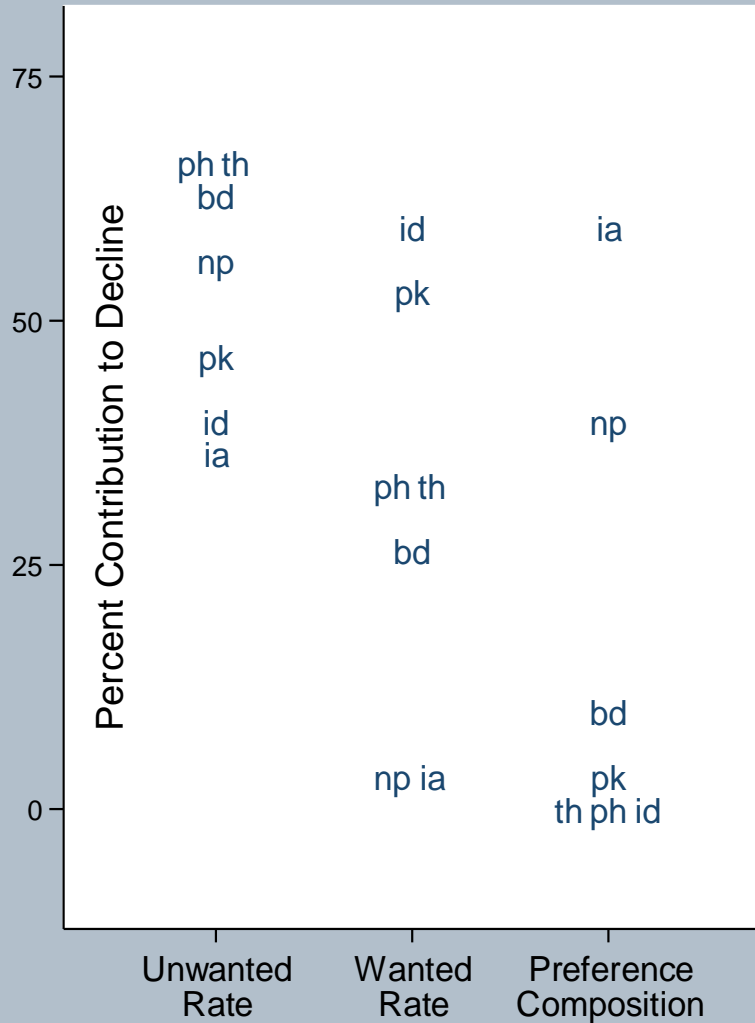
And the two condition each other:

- Composition is weighted by rates, and *vice versa*

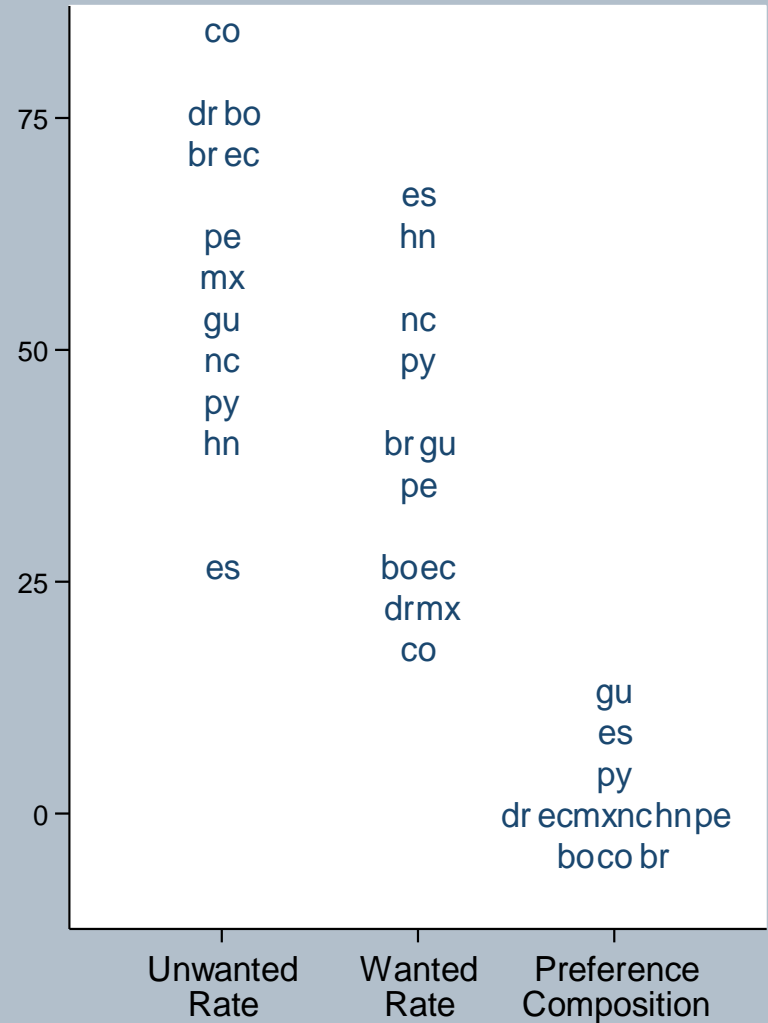


# Three-Component Decomposition of Fertility Decline

## Asia

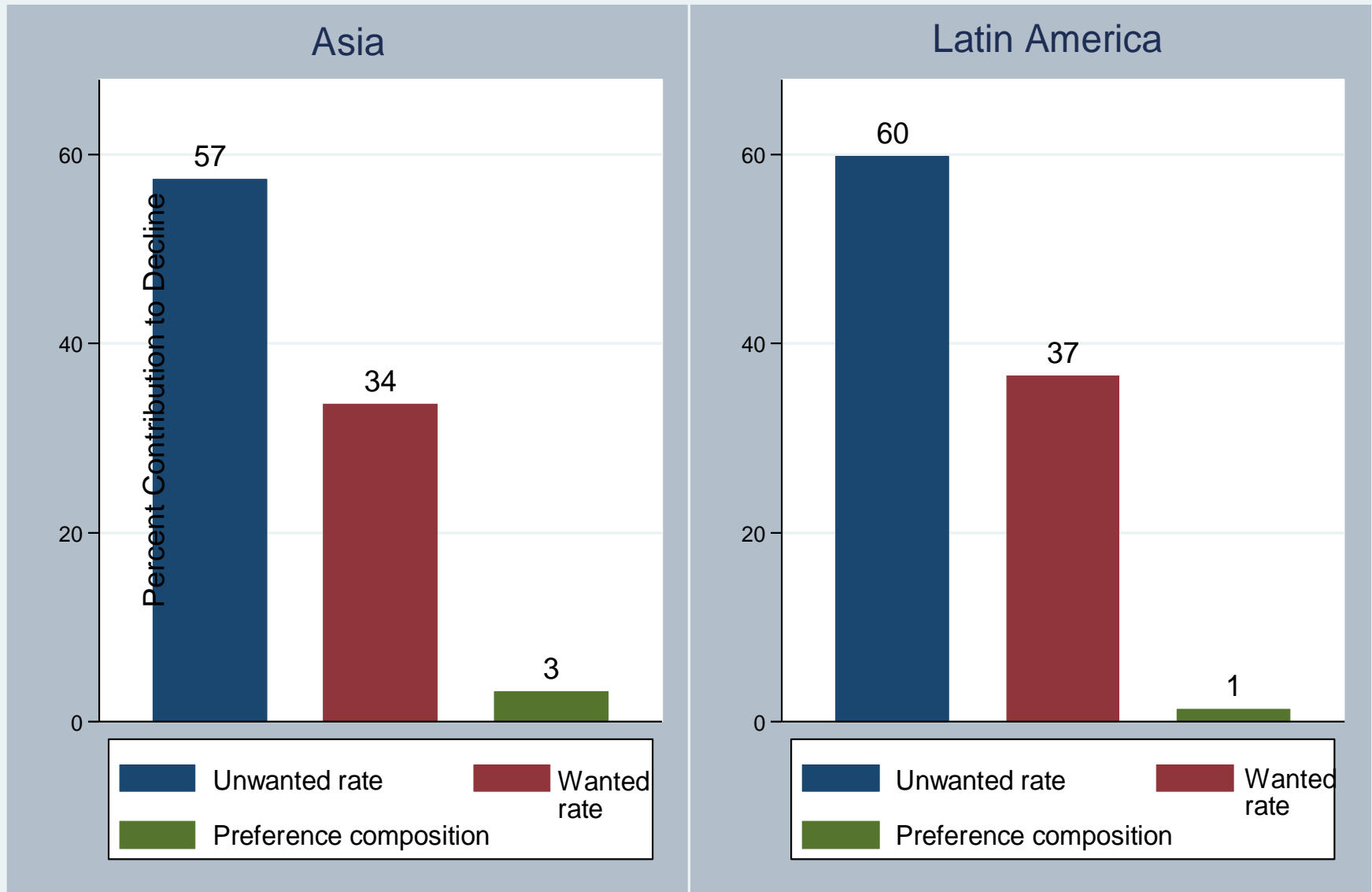


## Latin America



# Three-Component Decomposition of Fertility Decline

## Median Contributions



## Three-Component Decomposition: Results

- Decline in unwanted fertility rate is dominant component in both regions
- Change in fertility preference structure – percentage at risk of unwanted birth – makes a negligible contribution in both regions
  - because proportion wanting no more increases less than assumed during fertility decline
  - because there is little difference between wanted and unwanted rates at first survey
- Average results in Asia and Latin America are remarkably similar

## Better Specification of the Decomposition

In the analysis to this point, the “want” state includes never married women

i.e.  $p^w$  includes time spent never married

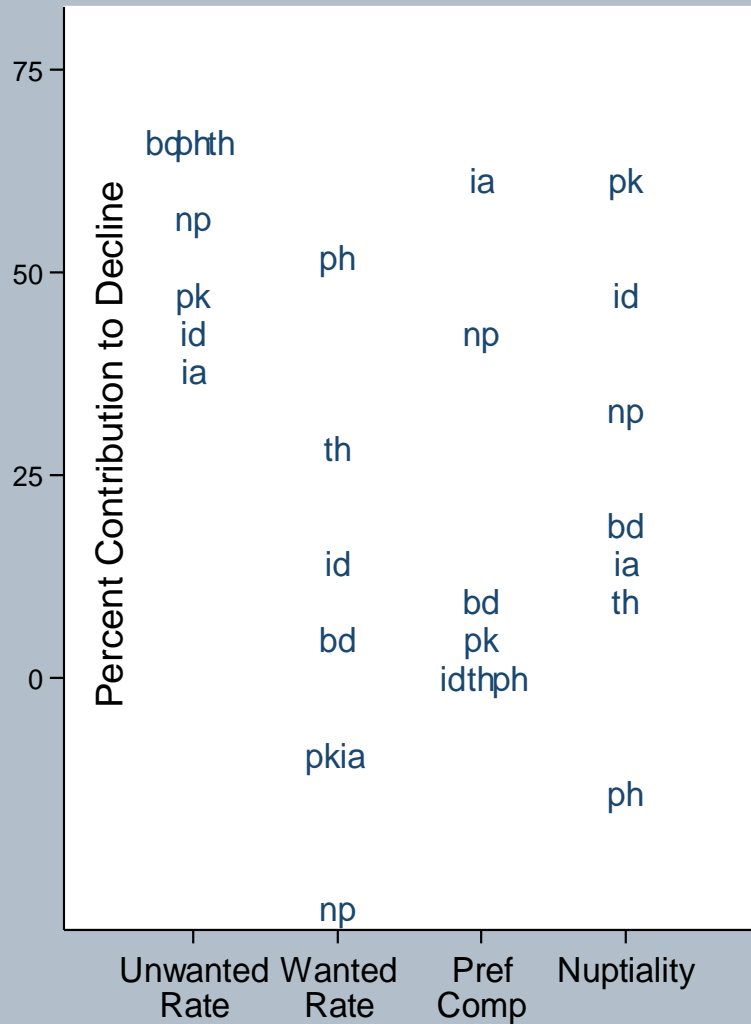
Often never-married exposure increases over the course of fertility decline

In itself, this will lead to reductions in the wanted fertility rate  $r^w$

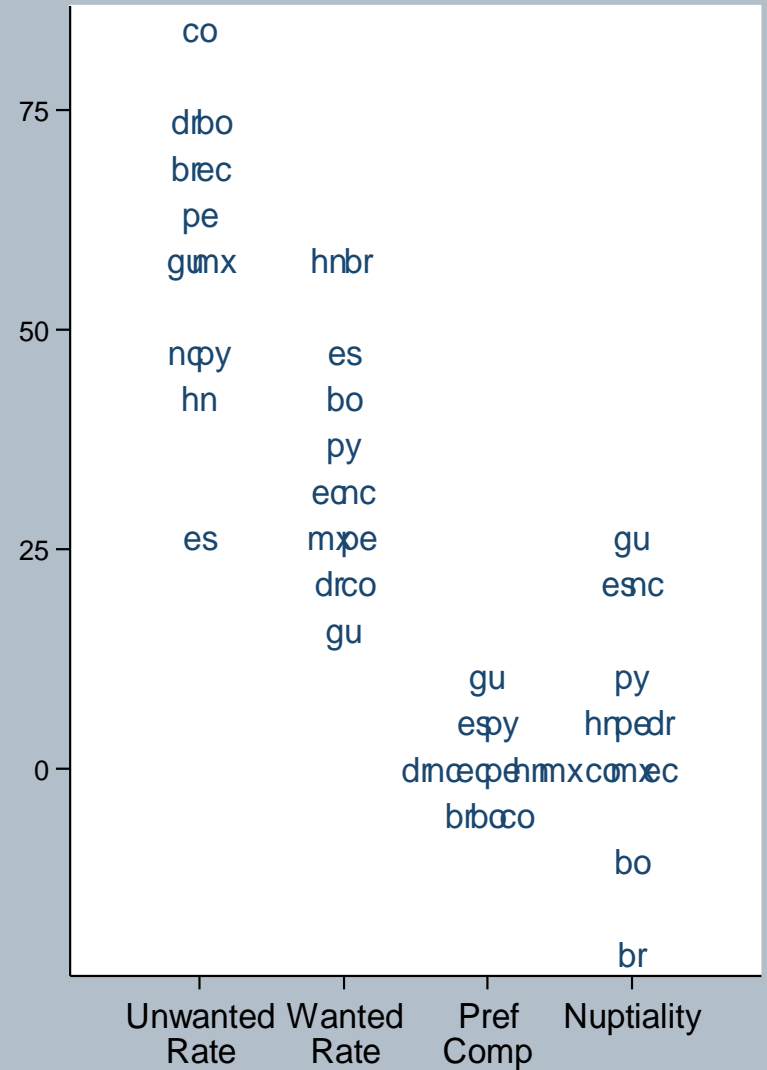
A more informative decomposition would separate out the never-married exposure (and the fertility rate during this exposure)

# Four-Component Decomposition of Fertility Decline

## Asia

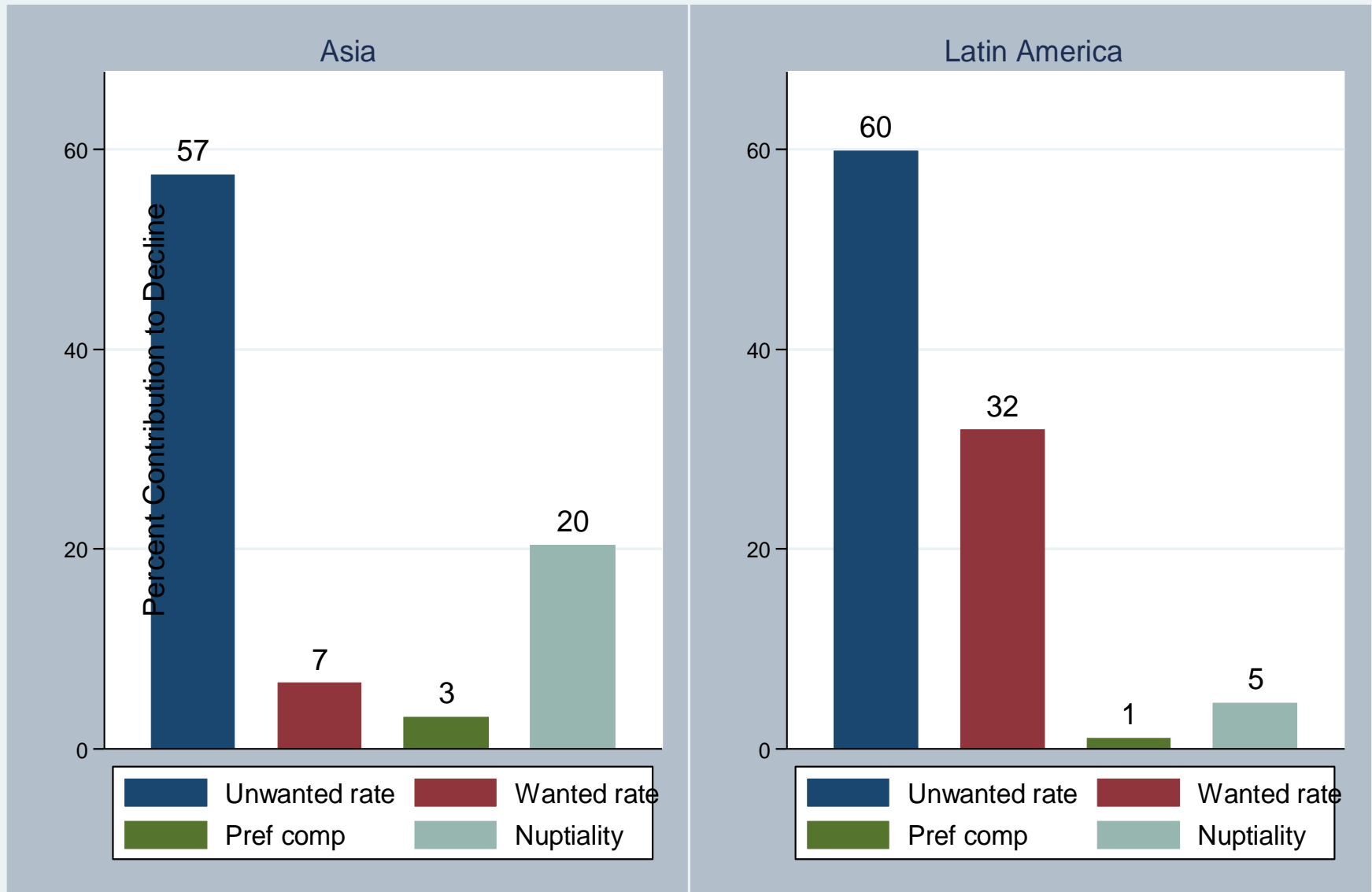


## Latin America



# Four-Component Decomposition of Fertility Decline

## Median Contributions



## Four-Component Decomposition: Results

- Decline in unwanted fertility rate remains dominant component in both regions
- Change in fertility preference structure makes a negligible contribution in both regions
- Declines in wanted fertility of more consequence in Latin America, and nuptiality change of more consequence in Asia

## Implications of Decomposition Results

Fertility decline is less about changing demand for children than often assumed

Rather, much more a matter of exercising control over reproduction, conditional on fertility desires

Why, and how, did this come about?

Perhaps part of a larger process of exercising more effective control over health – greater self-efficacy in achieving physical health aspirations

“Medicalization” of physical processes

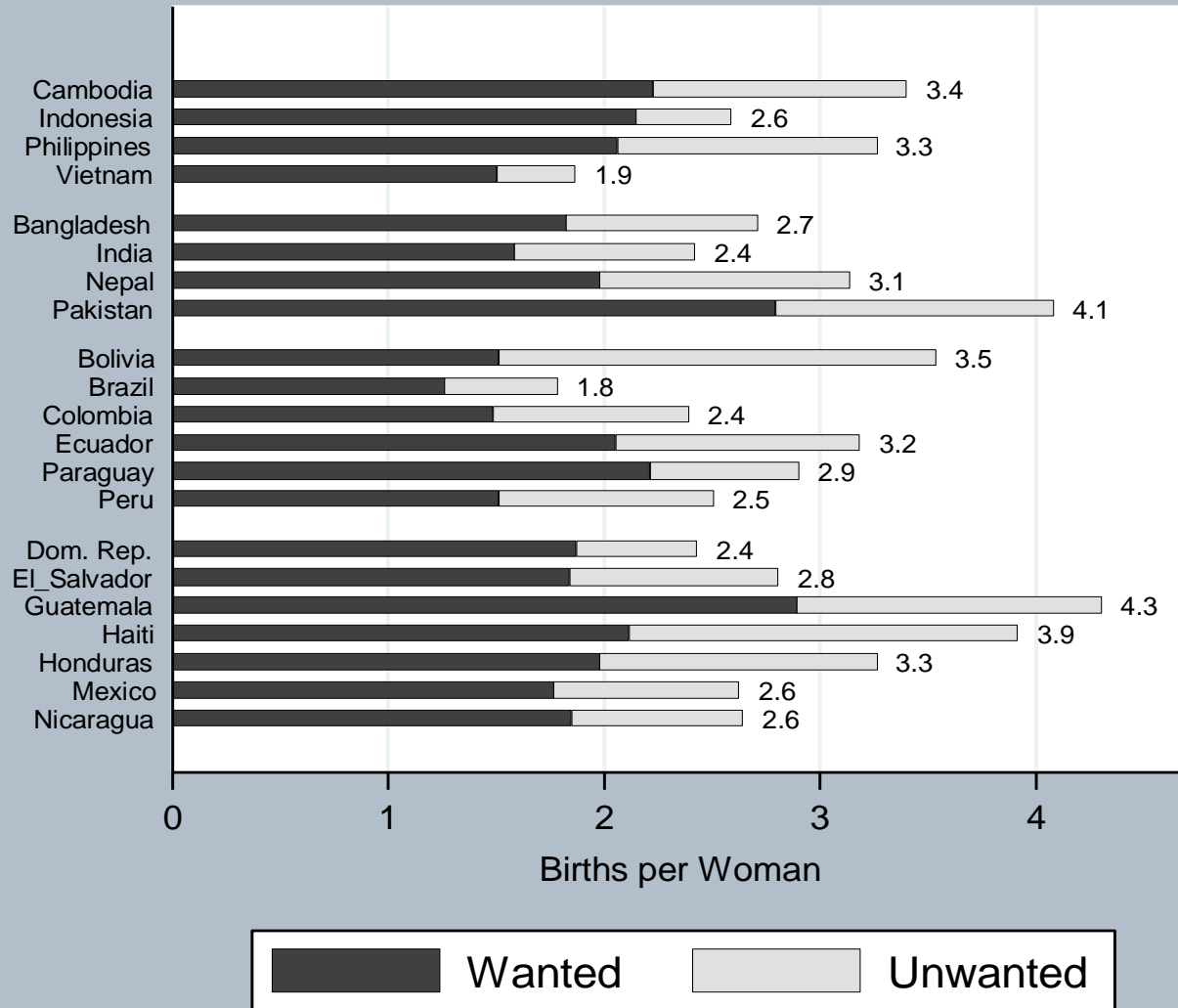


# The Current Situation

Breakdown of period fertility into wanted and unwanted components speaks to a number of salient questions about the nature of the present reproductive regime

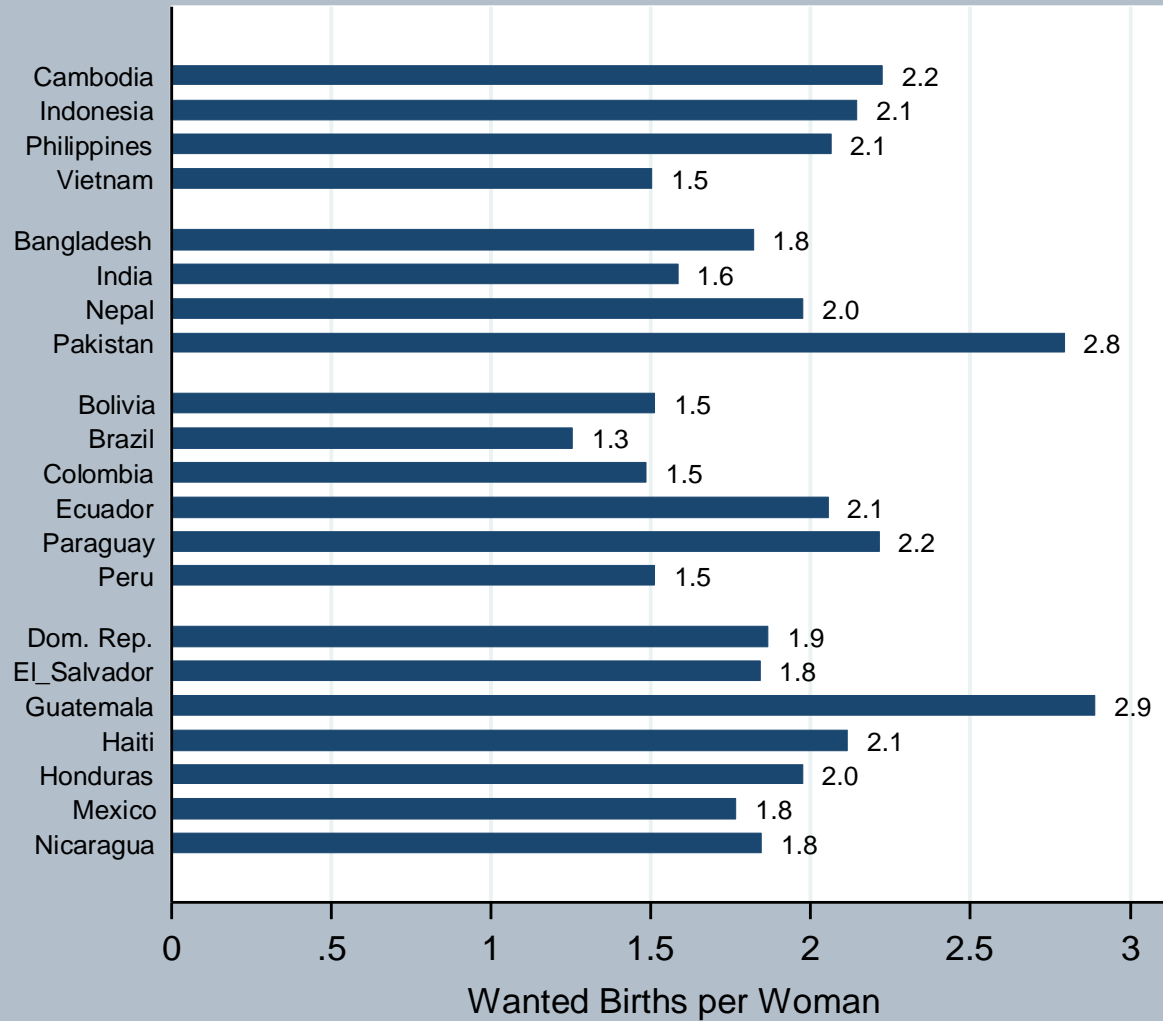
# Total Fertility Rate, by Component

## Most Recent Survey Since 2000



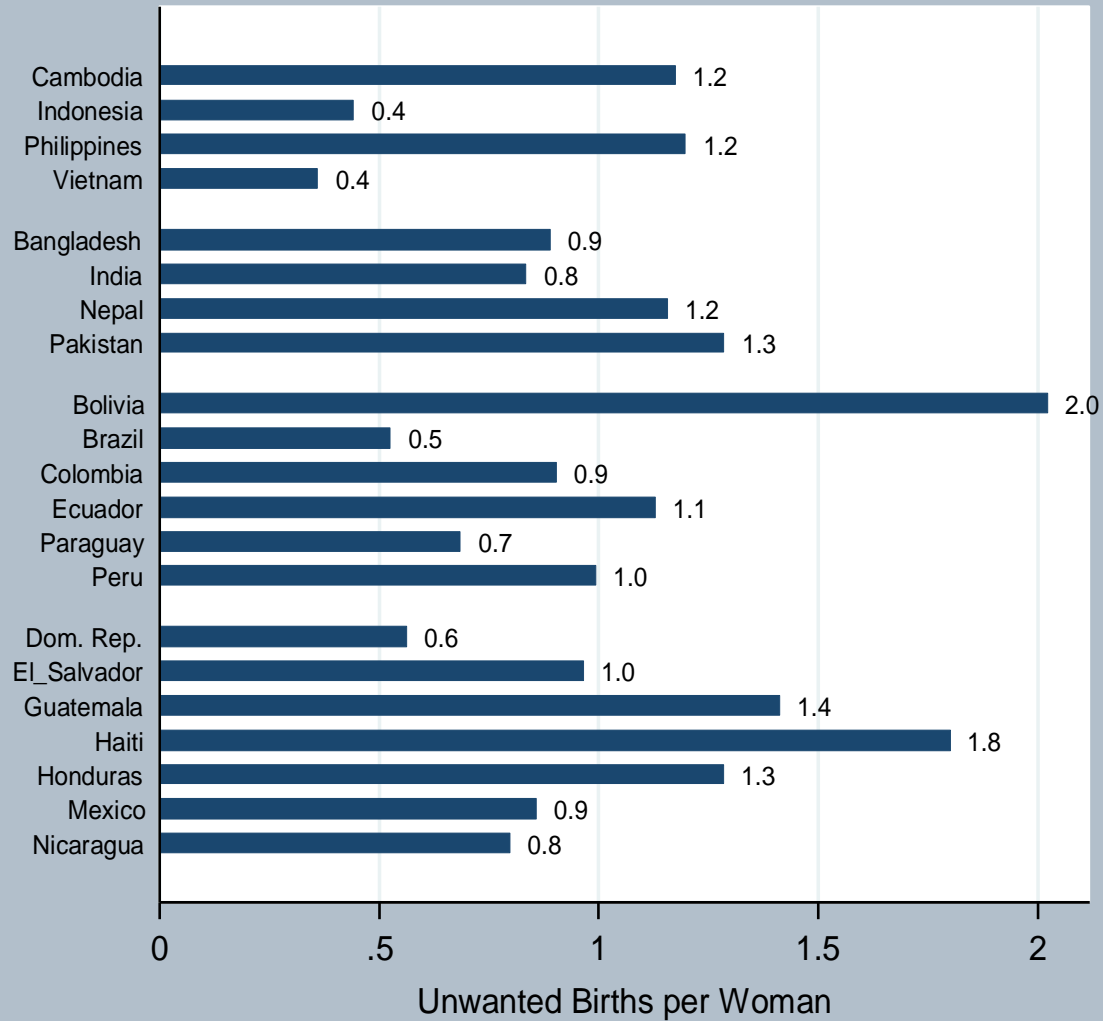
Aggregate Prospective estimates, 36 months before survey

## Wanted Total Fertility Rate Most Recent Survey Since 2000



Aggregate Prospective estimates, 36 months before survey

## Unwanted Total Fertility Rate Most Recent Survey Since 2000



Aggregate Prospective estimates, 36 months before survey

## The Current Situation: Empirical Patterns

- Wanted TFR is at, or below, replacement in almost all countries in both regions
  - but note: Wanted TFR is not desired fertility – includes shortfall
- Unwanted TFR ~ 1.0 birth (or greater) in most countries in both regions

====> large numbers of women/couples failing to achieve reproductive aspirations

And what about shortfall – unrealized fertility?

cf Mendoza & Casterline – PAA 2011



## Alternative Specification (cont)

How to interpret the components of this decomposition from the standpoint of the long-standing debates?

- $p^w$      *proportion wanting more*: most clearly represents “demand-driven” decline
- $r^w$      *wanted fertility rate*: due to changes in birth-spacing and/or parity progression -- improved birth control, or changes in motivation?
- $r^u$      *unwanted fertility rate*: due to more effective birth control -- more contraception, due to reduction of access and/or non-access barriers? better use of existing technology?