

MIDDLE CLASS DETERMINANTS IN LATIN AMERICA (2000-2010)

A GENDER PERSPECTIVE

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Abstract

This paper investigates the determinants of middle class using multinomial probit modeling the likelihood of being poor (living below 50% of national median income), middle class (between 50% and 150%) or affluent (above 150%) and related gender specific effects for six Latin American countries (Argentina, Bolivia, Chile, Colombia, Mexico and Peru).

The analysis finds that middle class determinants in Latin America do not differ significantly from poverty ones, although with weaker effects. Female heads of households mostly belong to the poor and middle class. All countries show a similar pattern, with the older heading wealthier households. As expected, education remains a powerful, although with weakening over time, determinant of income classes belonging: primary education determines poor and middle class status while secondary and tertiary education increases the likelihood of being affluent.

The only noticeable difference between poverty and middle class determinants concerns employment characteristics (activity status): heads of household being unemployed, inactive or working in agriculture or public and social services leads household to be poor (but not middle class nor of course affluent). On the contrary, other household's members being unemployed or inactive leads households to be poor or middle class. Self-employment is another important determinant of poverty but not of middle class.

Adopting a gender perspective using two alternative specifications of multinomial probit, the analysis finds that (i) female headed households more often belong to the poor and middle sector (ii) education benefits them more than their male counterparts (iii) and they suffer less from being unemployed or inactive (in a majority of the sample countries). Husbands' characteristics have a greater impact on household's income class belonging than their spouses' characteristics. Spouses being inactive or self-employed are determinants of poverty and middle class while their counterpart husbands are only determinants of poverty. Somehow strikingly inactive as well as active spouses are negatively impacted by their husbands not working (inactive or unemployed). Indeed in terms of husbands characteristics' effect on spouses, no noticeable differences are found between countries where spouses are mostly active (such as in Bolivia and Peru) and countries where they are mostly inactive (such as in Chile).

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I. Introduction

The literature shows a growing interest in the concept of middle class over the past decade, especially in Latin American countries, where middle class size increased significantly. While the notion of belonging to the middle class appears to be universally attractive, it is not immediately clear what being "middle-class" means. In particular, do the characteristics of the middle class transcend national borders? This paper tackles some of these issues, applying an income-based definition of the middle class, to analyse the characteristics that determine class belonging across Latin American countries.

Most authors question the middle class definition and more specifically the relevance of having an absolute definition (taking into account different thresholds) or a relative one. They also deal with the significance of different policies –fiscal, social, educational- to be undertaken to prevent the middle class from falling into poverty. Here, this paper aims to underline what characteristics affect the likelihood of households' social classes belonging (belong to the middle sector rather than being poor or affluent). Indeed the underlying idea is to put into relief the weaknesses and strengths of the middle class so as to know what put them into the danger of impoverishment and on the contrary what strengthen them, so as to design the appropriate policies. We then focus on the gender aspects of social classes belonging.

The literature focuses on poverty determinants with no comparison with the other social classes (e.g. middle sector and affluent). In this paper, we use multinomial probit models for six Latin American countries (e.g. Argentina, Bolivia, Chile, Colombia, Mexico and Peru) to characterize the main determinants that can be considered as middle class strengths and weaknesses, so as to suggest public policies in favor of middle sector's sustainability.

The organization of the paper goes as follows, section II discusses middle class measurement, section III describes the main results outlined by the literature. Then section IV presents our methodology and empirical data used. Our main results are presented in section V, first regarding multinomial probit on heads of households, then adopting a gender perspective focusing on female specific determinants, and finally considering models based only on spouses to determine the relative importance of husband's and spouses' characteristics in income classes belonging. Section VI concludes.

II. How to define middle class

As mentioned, we used a median income based definition. Broadly speaking, measures to estimate middle class size can be categorized as to whether they rely on economic and/or social criteria. The first refers to an income/consumption range that segments population distribution². The second group includes reference to specific behavioral characteristics, as education, occupational status, and consumption patterns. Opinion surveys constitute an alternative way to identify middle classes.³

Income based definitions are usually either “absolute or relative”. The former assumes fixed (i.e. absolute) income ranges (PPP adjusted); the latter middle ranges of national income distributions (i.e. quintiles). While income-based definitions enjoy higher analytical rigor than perception-based concepts, they remain debatable. Absolute thresholds suffer from some arbitrariness,⁴ which emerges when applied to heterogeneous development levels. An absolute benchmark, while providing a common reference, might fall short of accounting for country-specific features and development levels. Relative definitions might provide less homogeneous boundaries as they are country tailored. In general, absolute definitions have been applied to the evolution of the global middle class while relative boundaries for country specific investigation.

To gauge middle class size “measurement-sensitivity”, Castellani and Parent (2011) compare several alternative measurements and apply them to selected OECD and Latin American countries:⁵

- a) PPP based definition 2- 20 USD (2005 PPP) per capita per day
- b) Distribution based definition: leaving out the poorest 20% and the richest 20%
- c) Median income based definition: 50-150% of median income (i.e. poverty generally defined as 50-60% of median income)
- d) Poverty-line based definition: lower bound the national poverty line (national, urban), NPL and the upper bound is set as a multiple (3 times) the poverty line

Given that distribution based definition results in a fixed middle class size (60%) and that poverty line definition might imply different national methodologies, measurements based on median income seem to provide some degree of homogeneity, allowing for cross country comparison and reflecting within-country distribution patterns. Moreover, being invariant to changes in income, it can be easily used to analyze size evolution over time.

Besides income, the debate over the middle class is often focused on standards of living. This entails ownership of durable goods, educational levels, and occupational status. A middle class life style is typically associated with the ownership of equipment goods (i.e. refrigerators, telephones, automobiles), to such an extent that several contributions to the middle class literature consider the durable goods ownership as a ‘defining gauge’ for the stage of development of a country. A look at these elements helps identify “features” that might define a global middle class beyond income levels. Literature on social determinants has mostly dealt with the determinants of poverty; however, its methodology remains similar to that of studying middle class. The following section presents the literature results.

² Easterly (2001), Thurow (1999), Byrdsall (2001), Eisenhauer (2008)

³ Latinobarómetro

⁴ While poverty thresholds are clearly defined, middle class “boundaries” rely on arbitrary limits

⁵ See also Byrdsall et al (2000).

III. Literature review

The middle class concept and measurement as well as its particularities in comparison with the other social classes (poor and affluent) are still widely discussed and contended. It is of interest to underpin recent ways of measuring the middle class (distinguishable from the ones mentioned in the previous section), although as it was the case with previous measures, all authors agree on the fact that the size of the middle class in Latin America has increased over time, and still is.

The polarization-based measurement, that relies on the fact that individuals identify with a group and feel alienation with respect to other groups depending on their incomes, exhibits homogenous results in terms of middle class evolution across the years (Cruces et al., 2011).

They find that through this measurement the middle class in Latin America⁶ has increased over time, that their level of education is in between that of the poor and the affluent and that the middle class is closer to the affluent in terms of both employment (that is higher among the middle class and the affluent) and unemployment (that is higher among the poor). The recent middle class measures also include the notion of vulnerability of the social class. Torche and Lopez-Calva (2010) define the middle class according to household characteristics related to the capacity to generate income and show that the middle class remains characterized by some degree of economic vulnerability which reduces the differences between them and the poor in spite of different income levels. In the same vein, Lopez-Calva and Ortiz-Juarez (2011) exhibit a view of the middle class based on vulnerability to poverty. They find that given this definition the middle class in Latin America⁷ has increased during the past two decades. According to them, a quite large amount of people above the poverty line should not be classified as middle class since their vulnerability to poverty is high, and despite the fact that part of the population do not fall under the classification of middle class given their vulnerability to poverty, they are not eligible for poverty programs according to traditional definitions while they would need it.

All these middle class measures based on income have also lead to some conclusions regarding the homogeneity of the middle class regarding values on society. Lopez-Calva and al. (2011) show that there is a robust link between the income-based middle class and their values, although the middle class does not have many specific values linked to belonging to this social class. . Indeed, except from its moderation the middle class values are in between that of the poor and the affluent, and varies more according to the countries than to the social class.

Other authors have questioned the different middle class income-based definitions. Cardenas, Kharas and Heano (2011) argue that attempts to use income measures are limited by the lack of information about incomes in values surveys which is either absent or classified in broad categories. Some authors focus on the subjective measure of the middle class. Using the Gallup World Survey, Lora and Fajardo (2010) make a comparison between income-based middle class definitions and self-perceived status. Their results show that median income based definition displays the higher mismatched with self-perceived status while absolute income displays the best matching. The differences between income-based measurements and self-perceived status are that the latest is associated not only with income but also with personal capabilities, interpersonal

⁶ The sample used by the authors includes Argentina, Brazil, Chile, El Salvador, Mexico and Uruguay.

⁷ The sample used by the authors includes Chile, Mexico and Peru.

relations, financial assets and the perception of economic insecurity. In the same way, Amoranto, Chun and Deolalikar (2010) also rely on the self-perception of either status or position in the income distribution to measure the middle class in emerging countries.

Poverty measurement has also been questioned. Bourguignon and Chakravarty (2003) opened a new way in the area with the introduction of the concept of multidimensional poverty. Indeed, they exhibit that poverty should not only be defined by income or consumption because it is a multidimensional concept. They reject the previous literature attempts that tried to aggregate various attributes into a single index and a unique poverty line. Indeed they propose a specific poverty line for each dimension of poverty and consider that one is poor if he or she falls below at least one of this line. Alkine and Santos (2011) followed the way and constructed a poverty index using household level data aggregated at the country level. Just as the rest of the literature, Alkine and Foster (2007) take virtually all the elements of the measures as given (determined outside measure), notably the dimension of poverty, the dimension specific cutoffs, the weights on deprivation and the minimum number of deprivation needed to be deemed "poor". Poverty measurement literature has gone in this direction since then but Ravallion (2011) argues that there still remain flaws in the measurement. Poverty monitoring efforts should rely on a credible set of indices each considering a different dimension of poverty relevant to a specific setting rather than one. He questions the notions of weights attributed to each poverty attribute that should not be selected by the economist but consistent with well-informed choices made by people.

While the concepts of middle class and poverty measurement are widely discussed, the literature mostly deals with the determinants of poverty and extreme poverty and very little with the determinants of the middle class.

Most of the literature is mainly based on the study of poverty determinants in various developing countries, showing differences in terms of methodology but similar choice of variables. Most authors take into account household composition and individual characteristics and some of them also include housing and/or access, to community services or specific countries determinants. Household composition commonly includes the number of children by age class, the number of elderly, and whether the household is headed by a female. Individual characteristics include age, gender, education (the decomposition of the variable varies given the papers), employment (despite some differences authors commonly take into account employment, unemployment, inactivity and self-employment) and sectors of activity. Common results point that education, being employed, being male, and age positively affect income and decrease poverty.

Some authors include housing characteristics (the tenure of housing and its characteristics). Housing ownership can be very closely linked to income, although Fiess and Verner (2004) argue that in Brazil, in 1998, housing ownership in urban areas among the extreme poor was 78% against 70% for the affluent. Properties of the household are interesting as they represent the household's inventory of wealth and therefore affect its income flow. Furthermore, some households, especially in rural areas, can be poor in terms of income, but wealthy when their property is taken into consideration.

Fiess and Verner (2004) study poverty in Northeastern Brazil in comparison with the rest of the country based on a probit analysis. They take into account the following housing characteristics: tenure, materials of roof and walls, access to electricity, safe water and sanitation.

Using a sample of Latin American countries⁸ from 1986 to 1998 and country-specific household survey data, Wodon et al. (2010) perform an analysis of the impact of poverty determinants on the log of per capita income divided by the poverty line. Apart from the determinants mentioned above, they include the variable ethnicity that displays an important negative impact, and they also consider migration that shows a positive effect. Their study of individual determinants indicates that the spouse's characteristics often have a smaller impact than the ones of the head of household on poverty.

As they mention, households headed by females display a negative impact on poverty and spouses' characteristics are less important than their husbands'. Therefore, females' decision-making is of great importance in the analysis of their belonging to various social classes.

The analytical framework of females' decisions that will impact household income includes female decisions of participating in the labor market, getting married and with whom; having children and how many years of education they receive.

Mizala et al. (1999) in a Chilean study based on household surveys show that women labor participation positively depends on being head of household, having daughters between 19 and 24 years old living at home, having a maid and benefiting from house facilities (mostly running water and electricity). However women labor participation is negatively correlated with being married, having children under 18 years old living at home independently of their gender. Connely and al. (1996) had previously found similar results on Brazil, as well as Wong and Levin (1992) on Mexico. More recently, Atal (2010) using a general equilibrium model taking into account decision making intra household, having children, benefiting from tax credit and technological improvements validates the same findings, and also confirms Meyer and Rosenbaum (2001) positive impact of income tax credit on women labor participation, as well as Schonberg et al. (2007) negative impact of maternity leave on women getting back to labor market.

The decision of having children and getting married seems to be linked both to education and income. Through an IADB network dynamic analysis of household decision making in Latin America encompassing different country studies (Brazil, Colombia, Mexico, Peru and Uruguay) ran by different authors, Attanasio et al. (2002) show that having children is decreasing with the level of education while it is positively linked to income.

The level of education in Latin America tends to be higher than it used years ago and negatively impacts marriage; indeed educated women get married latter if sometimes not at all. Blau et al. (2000), through a USA study, put in evidence that white better female labor markets (16-24 years old) and black better female labor market (25-34 years old) tend to lower marriage rates.

⁸ Mexico, Guatemala, El Salvador, Hondura, Nicaragua, Colombia, Bolivia, Chile and Brazil.

All of these results show that the income brought to the household by females depends on female's decision-making but it is also closely linked to the existence of gender gaps such as earning gender gaps and educational gender gaps that are the most commonly analyzed in the literature.

The increase of educational level in Latin America and the reverse educational gender gap most countries of the region have experienced, surely have an interesting impact on female belonging to middle class. Indeed, Duryea et al. (2007) exhibit that in Latin America the schooling gender gap has closed for the cohort born at the end of the 60's and reversed for the following cohorts such that females have on average a quarter of schooling more than males. The changes are explained by educational attainment of females at the higher levels rather than improvements in the early years of education. However Bolivia, Guatemala, Mexico and Peru have not yet closed the gap in adult schooling attainment and the noticeable gender differences regard indigenous boys and girls of the lowest income quintiles. One of the plausible implications of these changes in the gender educational gap has to do with changes in marriage markets. It has been documented that individuals are delaying marriage decisions across the world, including in Latin America. Furthermore there has been an expanding education in Latin America for the past two decades and the proportion of the labor force with at least secondary education has increased from 40% to 60% (Gasparini et al., 2011, Galvis, 2010), females benefiting from this expansion at least as much as males.

Another element that probably accounts for part of females' head of household specific characteristics is gender earning gap. The vast literature on the subject has underlined that disparities are partially attributed to gender differences in observable socio-demographic (age, education, occupation, working time, experience, type of contracts, job status, marital status, having children), job characteristics (level of formality, occupational segregation by gender) and cultural, political norms or geographic location. It has been exhibited that earning gender gap is not homogeneously distributed but affects women at the top of the income distribution (Kandil, 2009) or at the top and the bottom of the income distribution (Badel et al. 2009). When in relation with education, the top of the distribution regards tertiary educated females and the bottom low educated ones (De la Rica, 2005). Regarding the socio-demographic differences, females decisions mentioned previously play a predominant role. However, after comparing males and females with the same characteristics, Nopo et al. (2011) puts into relief that earning wage gap falls between a range of 8% to 48% but remains consistent. Therefore an important component of those earning differentials cannot be explained by gender differences in observable characteristics, is not linked to females' decision-making and remains to be explored. Unexplained pay gap is higher among older, informal and self-employed workers (Atal et al. 2009). In Latin America, males still earn 9-27% more than females with high cross country heterogeneity (Atal et al. 2009). Indeed, the global gender gap index that benchmarks national gender gaps on economy, politic, education and health-based criteria underlines the heterogeneity between the countries (Hausmann et al. 2010).⁹

Female heads of household often display a negative impact on their household's income in the literature, while the case of spouses is little analyzed. Given the importance of both females 'decision-making and gender gaps they suffer from on their individual and household characteristics (marital status, education, type of contract, number of children, status...), after

⁹ Positions of the Latin American countries of our sample among the 135 positions (1 being the country with the smaller gender gaps and 135 the country with the worst) Argentina: 28, Chile: 46; Bolivia: 62, Peru: 73, Colombia: 80 and Mexico: 89

having examined the determinants of the head of households' income classes belonging in the first place, we decide to focus on a comparison of males and females head of household in a second one so as to analyze the specific characteristics of female heads of household and the impact of these characteristics on their income classes belonging. Finally and in the third place, given the fact that females head (as explained in the following sections) only represent a few percentage of all females, we also focus on spouses to identify the impact of their characteristics on the household income classes belonging in comparison with the ones of their husband. And we try to analyze whether spouses play a role in the determination of the household's income classes belonging.

IV. Methodology and data presentation

For a binary treatment analysis such as poverty belonging, logit and probit models usually leads to similar results. However, when leaving the binary treatment case, the choice of the model becomes more important. The multiple treatment analysis is constituted of more than two alternatives (see Imbens (2000) and Lechner (2001)). The multinomial probit (MNP) model plays an important role in social, econometric and biological sciences for the analysis of multi-category response. It enables a greater degree of flexibility in modelling discrete categories over the commonly adopted multinomial logit (MNL) model, based on stronger assumptions than the MNP, making the latter one the preferable option¹⁰. The main advantage of MNP is that it allows an analysis of multiple, unordered outcomes. Nevertheless, our variable class is obviously ordered, but unlike ordered models, the MNP estimate allows different coefficients for every dependant variable on each poverty/middle class/affluent outcome¹¹. Despite the loss of the easily-computed form of the MNL model, we preferred the multinomial probit model in the present analysis.

The variable of interest, "income class" is based on the total household income adjusted for family composition with OECD adult equivalent scale¹², allowing income comparison of households of different sizes and structures. The analysis considers three possible outcomes for each household: 1) poor households, e.g. with income¹³ lower than 50% of national median income, 2) middle class households, e.g. earning between 50% and 150% of median income, and 3) affluent households with more than 150% of median income.

¹⁰ Especially the 'independence from irrelevant alternatives' assumption (IIA) is critical. It basically states that the odds ratio between two alternatives are independent of other alternatives. This assumption is convenient for estimation as it is less burdensome to compute but not appealing from an economic or behavioural point of view (for details see e.g. Greene (2003)).

¹¹ We computed as well multinomial logit and ordered probit on Colombia (2010), and found relatively stable results no matter the selected model. All marginal effects have the same sign, with relatively stable size.

¹² This is the "OECD-modified scale", which has been adopted by the European Commission, among others. Other scales used in international comparisons include the square root of household size (used in many OECD studies since the 1990s). In practice, the difference implied by the choice of one or another of these weighting schemes is small. See Castellani and Parent (2010) for more details.

¹³ Income adjusted for family composition

Our discussion of the determinants of middle class builds on the use of household surveys for Argentina, Bolivia, Chile, Mexico and Peru. Colombian results are computed on Living Standards Measurement Study surveys (LSMS).¹⁴

In the early 2000 Chile and Mexico had the smallest poor class (20%) of all 6 countries in our panel, while Colombia had the biggest one (37% of households were poor in Colombia in 2003). Poverty has declined in all six countries over the past decade but not homogenously: in 2009-2010, Chile and Mexico still have the smallest poor class (around 17%); Colombia experienced a huge reduction of poverty (-17pp in 7 years); Bolivia is the new bad student of LAC in 2009/2010 with 23% of poverty.

In the early 2000's, Colombia had the smallest middle class (24% in 2003), while Mexico and Chile had the biggest one (48% in 2000). Ten years later, the progression of middle class is impressive, especially for Colombia (+22pp in 7 years): in 2009/2010, middle class households represent from 45% in Bolivia up to 53% in Mexico, three other countries counting with more than half of total households being middle class: Argentina, Chile and Peru.

Finally, in the early 2000's, Peru had the smallest affluent class (31%), while Colombia had the biggest one (39% in 2003). The proportion of affluent households declined down to 30 to 33% of total households in 2009-2010. Affluent class size is therefore relatively homogenous across countries at the end of the period.

We estimate three different specifications of multinomial probit models (MNP):

The first specification, taking into consideration all head of households, investigates the impact of the head of household's individual characteristics, as well as his employment, occupation and economic ones on income classes belonging. In a second specification, we focus on gender specific effects for female headed households, authorising specific gender effects for all individual and work-related characteristics. Finally, our last specification is based on a different population: we run MNP on head of household's spouses including both their own individual and work characteristics and their husband's characteristics. The aim of this last model is to identify the relative importance of spouses' decisions and characteristics compared to the head of household ones.

Model 1 can be specified as follows:

$$Class_i = \alpha_1 Gender_i + \beta_1 X_i + \gamma_1 H_i + \varepsilon_{1i} \quad (1)$$

where $Class_i$ is the income class of household i (either poor, middle class or affluent), $Gender_i$ a dummy variable for household head gender, X_i a set of individual characteristics of the head of household i , H_i a set of employment, occupation and economic variables of the head of household. We assume ε_{1i} to be *i.i.d* $N(0, \sigma_1^2)$.

¹⁴ Annex 1 lists the countries, and the survey data's source. It also lists the sample sizes and the proportions of poor, middle class and affluent households in each survey.

The set of dependent variables we chose as possible determinants of poverty, middle class, and affluent belonging may be describe as follows:

- The vector of individual characteristics X_i includes age classes, educational attainment (primary education, secondary or technical and university), marital status (single or couple including non-married couples) and a dummy variable for ethnic origin (majority or ethnic minority group).
- The vector of employment, occupation and other economic characteristics H_i includes a dummy variable for geographic localization (living in the metropolitan region or not), the number of others household members active occupied, unemployed and inactive, a variable including activity status and sector of activity (when occupied) of the head of household and a dummy variable of self-employment of household head.

Our reference population considers households headed by a man, 41-65 years old, with primary education (completed or not), single, belonging to the majority ethnic group, who is occupied in services, not self-employed and who lives in the metropolitan region (Region of Gran Buenos Aires in Argentina, department of La Paz in Bolivia, metropolitan region of Santiago in Chile, district of Bogotá in Colombia, federal district and state of México in Mexico and region of Lima and Callao in Peru).

Other characteristics would have been interesting to include in this model, but for two types of reasons we couldn't consider them in our estimation:

Some variables would have been interesting determinants of class belonging, but were not available in our surveys: 1) Regional characteristics on the one hand, such as isolation/remoteness, weather (e.g.: are typhoons or droughts common) and environmental conditions (e.g. frequency of earthquakes), regional governance and management, and 2) Community characteristics, such as infrastructure (e.g. is there piped water, access to a tarred road), land distribution, access to public goods and services (e.g. proximity of schools, clinics), social structure and social capital, on the other, matter and may be of importance to determine the middle class determinants.¹⁵

We also eliminate variables with possible endogeneity problems regarding income such as house ownership, assets (land, tenure...), resource base including land and quality, health... Some variables are also endogenous to the "adjusted" income we used in the construction of classes: households characteristics are indeed already included in the construction of income adjusted for family composition (household size, composition of the household, age of each member)¹⁶.

¹⁵ Other important information such as safety, peace of mind, sustainable environment, belonging to a community could not be taken into account but might be relevant characteristics of the middle class

¹⁶ The only characteristics related to household structure we included are activity status of household members, which are not endogenous to the adjusted income.

Beyond the analysis of middle class determinants, this paper focuses on a gender perspective through two additional empirical models:

Model 2 focuses on gender specific effects for female headed households, authorising specific gender effects for all individual and employment characteristics. Model 2 can be specified as follows:

$$Class_i = \alpha_2 Gender_i + \beta_2 Gender_i * X_i + \gamma_2 Gender_i * H_i + \varepsilon_{2i} \quad (2)$$

where $Class_i$ is the income class of household i (either poor, middle class or affluent), $Gender_i$ the household head gender, X_i the same set of individual characteristics as in model (1), H_i the same set of employment, occupation and economic variables as in model (1). We assume ε_{2i} to be *i.i.d* $N(0, \sigma_2^2)$. Considering $Gender_i * X_i$ and $Gender_i * H_i$ enables gender specific coefficients β_2 and γ_2 for individual and employment characteristics of female heads of household. It is thus interesting to compare male coefficients and female ones in order to point out gender disparities existing in middle class belonging.

Model 3 is based on a different population than models 1 and 2: it focuses on spouses. The aim of this last model is to identify the relative importance of spouses' decisions and characteristics compared to their husband's ones. The empirical framework is a multinomial probit estimation on spouses only including both their own individual and work characteristics and their husband's characteristics. Model 3 that can be specified as follows:

$$Class_i = \beta_3 X_i + \gamma_3 H_i + \lambda_3 K_i + \varepsilon_{3i} \quad (3)$$

where $Class_i$ is the income class of household i (either poor, middle class or affluent), X_i the same set of individual characteristics as in model (1) for spouses, H_i the same set of employment, occupation and economic variables as in model (1) for spouses, and K_i a vector of individual and employment characteristics for the husband in household i (including husband's educational attainment, activity status and sector of activity, and self-employment). We assume ε_{3i} to be *i.i.d* $N(0, \sigma_3^2)$. Considering K_i enables comparison between the relative importance of spouses' own individual and employment characteristics and the ones of their husband on the determination of the household standard of living.

Next section presents and discusses our main findings.

V. Results

1. Multinomial probit of the likelihood of being poor, middle sector or affluent

Annex 2 presents all marginal effects of model 1 multinomial probits for six Latin American countries: Bolivia and Chile for 2009, Argentina, Colombia, Mexico and Peru for 2010. The following table synthesises our main findings:

Synthesis of marginal effects sign and significance in MNP model 1

VARIABLES	2009 / 2010			Exceptions / notes
	Poor	Middle class	Affluent	
Male	Ref.	Ref.	Ref.	Bolivia, gender effect on poverty not significant (due to the very low proportion of households headed by women in Bolivia)
Female	+	+	-	
up to 30 years old	+	+	-	Argentina, elderly are more represented in middle class (+ on MC)
31-40 years old	+	+	-	
41-65 years old	Ref.	Ref.	Ref.	
more than 65 years old	-	-	+	
Primary education	Ref.	Ref.	Ref.	Observed in all 6 countries
Secondary education	-	-	+	
Technical education or University	-	-	+	
Single	Ref.	Ref.	Ref.	Argentina, Chile, Colombia: being in couple reduces the likelihood of being poor (- on poor)
Couple	+	+	-	
Majority group	Ref.	Ref.	Ref.	Effect unclear on middle class, variable not available on Argentina
Ethnic group	+	n.s.	-	
Other provinces/regions	Ref.	Ref.	Ref.	Bolivia, gender effect on poverty not significant
Capital	-	-	+	
Number of other occupied household members	-	n.s.	+	Observed in all 6 countries
Number of other unemployed household members	+	+	-	Observed in all 6 countries
Number of other inactive household members	+	+	-	Observed in all 6 countries
Active occupied, agriculture	+	-	-	Chile: head of household working in agriculture increases the likelihood of being middle class
Active occupied, industry	n.s.	n.s.	n.s.	Chile and Mexico : + on middle class and - on affluent
Active occupied, trade	Variable across countries			Chile and Mexico: + on middle class. Argentine and Chile: - on affluent, Argentinien and Peru: + on poverty
Active occupied, public and social services	+	-	variable across countries	Bovlie, Colombie, Mexico: n.s. or - on poverty, Chile: + on MC
Active occupied, other services	Ref.	Ref.	Ref.	Observed in all 6 countries
Active unemployed	+	-	-	
Inactive	+	-	-	Observed in all 6 countries
No self employed	Ref.	Ref.	Ref.	Chile: all the contrary: - on poor and MC, + on affluent
Selfemployed	+	-	-	

Table 1: Synthesis of marginal effects signs and significance in MNP Model 1

Middle class determinants in Latin America are found to be very close to poverty determinants, although in lower proportions (table1). Female heads of households mostly belong to the poor and middle class. In all countries, the age pattern is similar, the older the heads of household, the more likely they become affluent. As expected, education remains a powerful, although declining over time, determinant of income classes, primary education remaining a poor and middle class determinant while secondary and tertiary education increasing the likelihood of being affluent.

The only noticeable exception concerns employment characteristics (activity status): being unemployed, inactive or working in agriculture leads to poverty but not to middle class. Self-employment is another important exclusive determinant of poverty, but not of middle class.

Model 1 has also been computed for the period 2000-2006 in order to analyze results consistency and time evolution of middle class determinants. Detailed results are presented below:

Gender: Female is a determinant of poverty and middle sector, while male heads of household are more represented in the affluent class.

Regardless of the country, female-headed households are noticeably more likely to belong to the poor or the middle class (annex 3A). Indeed in all six countries, gender displays a negative impact on income classes belonging. The strongest impact is identified in Colombia while the smallest is in Peru (significant only at the end of the period, and for the middle sector and affluent part of the analysis), although the differences between countries are not too consistent.

Gender is a determinant of both poverty and middle class in Latin America: compared to the affluent, women tend to be over-represented in poor and middle sectors classes. In 2009/2010, being female increases by 4.4% (Mexico) to 6.0% (Argentina) the likelihood of being poor, by 3.3% (Argentina) to 9.6% (Bolivia) the likelihood of belonging to the middle sector, and decreases by -5.0% (Mexico) to -11.4% (Colombia) the likelihood of being affluent. Over time, all things being equals, the disadvantage of being a female tends to decrease in Colombia (regarding poverty essentially), while it increases in Argentina and Mexico. The effect has remained quite stable in Chile since 2000.

Age: Younger household heads are more likely to be poor and in a lesser extent belong to the middle sector. The older they are, the more likely they will become affluent.

In all countries, the age pattern is similar, the older the heads of household, the more likely to climb the income ladder (annex 3B). Age displays the same pattern with a negative impact of being young (less than 30 years old and between 31-40 years old) and a positive one of being old (more than 65 years old).

In 2009 or 2010, less than 30 years old heads of household are between 5 and 15% more likely to be poor and between 4 and 11% more likely to belong to the middle sectors compared to the reference population, 41-65 years old. Being young decreases the likelihood of being affluent by between 10 and 20%. Elder heads of household (more than 65 years old) are generally less likely to be poor and more likely to be affluent.

It is interesting to note that in Bolivia, older heads of household are not particularly wealthier and young heads of household are not significantly poorer than in other Latin American countries. In Mexico, being old was not associated with poverty in the early 2000's, but it is since 2006. Last but not least, elderly heads of household are more likely to belong to the middle sector in Argentina while the contrary is observed in all 5 other Latin American countries studied.

Young households generally lie at the lower end of the income distribution.

Education: Primary education is a determinant of poverty and middle sector, secondary and tertiary education tends to pull towards affluent class.

As expected, education determines income: primary education is an important determinant of poverty and middle class, while secondary and tertiary education increases the likelihood of being affluent (annex 3C). Obviously, tertiary education displays a greater impact than secondary education.

In 2009-2010, poor and middle sector heads of household are mostly primary educated in Latin American countries: for example 80% of Bolivian poor heads of household are primary educated, as are 54% of Bolivian middle classers.

The highest impacts of education (both secondary and tertiary) on income classes belonging are observed in Chile, Colombia and Mexico. .

All other things being equal, we observe a decreasing impact of education along the years for almost all countries, which can be attributed to the fact a wider access to education. Education becoming more important for higher income classes in Argentina and Colombia since 2003 might be linked to the recovery those countries after the end of the 90s crisis, although this hypothesis cannot be validated here.

Matrimonial status: Marital status effect is ambiguous on poor and affluent sectors but increases the likelihood of belonging to the middle sector.

Interpreting matrimonial status is quite challenging because the effect captured in MNP includes various effects on income classes, due to the way these classes were constructed (cf. methodology section):

- Being in couple may bring a second salary to the household's income composition but household composition affects adjusted income "per capita". Couples have a greater probability of having children, so the construction of income adjusted for family composition will mechanically lower household income by dividing total earning by the sum of total household members weights (cf. methodology section). For example, for a household with two children (one younger than 14, one older) and two parents we consider total earnings divided by 2.3. This might have a negative impact on income classes belonging for couples with children.
- Endogamy must also play a role here: as individuals tends to marry someone close to their own origin, social category, education... couple marginal effects may capture individual characteristics effects of the partner, reinforcing the disparities between classes: indeed affluent heads of household in couple are more likely to be with a better educated partner, of the same origin. In this case endogamy will induce to capture all "positive" effects of such good characteristics in the "couple" effect. On the other hand, poor heads of household, if married, are more likely to live with a less educated partner. Couple effect in this case will penalize him more, capturing these "penalizing" individual characteristics of the partner.

In conclusion, final effect of the couple determinant is therefore ambiguous (annex 3D), depending on the relative importance of each of these mechanisms.

In Argentina and Chile in 2009-2010, being in couple decreases the likelihood of being poor by -2.9% (Chile) to -4.1% (Argentina), increases the likelihood of being middle class by 2.4% (Argentina, not significant in Chile) and that of being affluent by 1.7% (Argentina) to 1.8% (Chile). On the contrary, being in couple increases the likelihood of being poor in Bolivia, Mexico, Peru and Colombia.

It is interesting to note that whatever the country (the impact being positive or negative regarding the poor and the affluent) being in couple always increases the likelihood of belonging to the middle sector.

The variable is not consistent all years in all five countries although it is tricky to draw conclusions regarding the tendency along the years.

Origin: Minority ethnicity is a determinant of poverty, while belonging to the majority group is a determinant of affluent class.

Belonging to an ethnic minority group displays a negative impact in all 6 countries of the sample (annex 3E). In 2009-2010, it increases the likelihood of being poor, while minority households are less likely to be affluent. The effect on middle class is mostly insignificant, and no general conclusions can be drawn on ethnic origin as a middle class determinant.

Greater impacts are displayed in Bolivia, Mexico and Peru while the less consistent is in Chile and Colombia.

While the variable is not available in Argentina, neither for most other countries for the period 2000-2003 (even 2006 for Mexico), drawing time evolution of this effect is challenging. We nevertheless note that there is a decreasing impact over the past decade in the countries where this information is available. In Bolivia, Chile, Colombia and Peru, the impact is almost halved over the period. This can be attributed to the fact that along the years, belonging to an ethnic group is less and less a burden on the labor market.

Geographical localization: Living in the capital region is a determinant of higher incomes, while living in the rest of the country is rather a poor and a middle class determinant.

In all countries, except in Bolivia, living in the capital (rather than in the rest of the provinces or regions) displays a positive impact on income (annex 3F), decreasing the likelihood of being poor by -3.1% (Chile) to -11.3% (Peru). It decreases the likelihood of being middle class by -2.1% (Argentina) to -8.1% (Peru), and capital inhabitants are 3.4% (Mexico) to 19.3% more likely to be affluent (Peru). This pattern is exactly the opposite in Bolivia, where Sucre inhabitants are more likely to be poor (+10.3%), and less likely to be affluent (-13.5%).

We observe a decreasing impact along the years in Mexico and Peru. There is no clear tendency in the remaining countries. Indeed, in Argentina, the impact decreases along the years regarding the poor and the middle sector but increases regarding the affluent. In Chile, the impact decreases along the years regarding the poor but increases regarding the middle sectors and the affluent. Finally in Colombia, the impact increases along the years regarding the poor and the affluent but decreases regarding the middle sector.

Activity status and sector of heads of household: Heads of household working in agriculture, being unemployed or inactive are determinants of poverty, while their working in services tends to be more a middle and affluent classes' determinant (annex 3G).

In 2009-2010, unemployed heads of household are more likely to be poor, less likely to be middle class or affluent. Being unemployed displays the highest negative impacts in Bolivia and Chile and the slightest ones in Mexico and Argentina. We generally observe a decreasing tendency of unemployment impact.

Inactive heads of household are more likely to be poor in 2009-2010, and less likely to be middle class. All countries follow the same pattern, except Argentina where inactive effect is positive on the likelihood of being middle class, but not always significantly. Finally in all countries being inactive decreases the likelihood of being affluent.

For active occupied heads of household, we focus on the sector of activity, in comparison with the reference population: working in other services (all services except trade, public and social services).

For heads of household, working in the agricultural sector always displays a strong negative impact on income classes belonging. No clear pattern can be identified of all other sectors: coefficients are less significant and display no homogenous impact in the countries of the sample.

In 2009-2010, working in the agriculture increases the likelihood of being poor and decreases the likelihood of belonging to the middle sectors or affluent. Working in agriculture is therefore a poverty determinant, in almost all Latin American countries. The only noticeable exceptions are 1) Chile, where middle class is also composed of a relatively important proportion of agricultural workers: and 2) Argentina where the effect of working in agriculture is not significant on the affluent side. This may be due to the high value and industrialization of the agricultural sector in Chile and Argentina, wine production, and extensive high-valued production, compared to the rest of the countries studied.

Working in the agricultural sector displays highest consistent negative impact in Bolivia where it represents a heavy burden on income classes belonging and in a lesser extent in Peru. The smallest negative impacts are observed in Chile and Argentina.

The impact is decreasing over the past decade in almost all countries, the exception being made of Peru (for all social classes) where working in agriculture explains more and more the gap between poverty on one hand and middle and affluent class on the other hand.

No clear pattern can be observed in what regards industry workers in Latin America, the only noticeable exception being Chile, where industry occupation is a middle class determinant. In Peru on the other hand, industry occupation is more a poverty determinant.

No clear pattern can be observed for trade workers: The only observable effect is displayed in Bolivia, where trade occupation is an affluent determinant.

Working in public and social services displays two opposite impacts in Latin American countries: in Mexico, Colombia and in a lesser extent Argentina the impact is positive, public and social services occupation protecting individuals from poverty and even from being middle class, and public workers more concentrated in the affluent class. The conclusion is radically different in Chile and (less significantly) in Peru, as the observed impact of public and social services occupation is negative. The effect is almost always insignificant in Bolivia compared to other services.

Public services occupation is therefore a poverty determinant in Chile and Peru, while it is more an affluent determinant in Mexico, Argentina and Colombia.

Heads of household being self-employed: Self-employment is a determinant of poverty, and non self-employment a determinant of middle and affluent class, with the noticeable exception of Chile.

Self-employment displays a negative impact on income classes belonging in all countries except in Chile where it astoundingly displays a positive effect (annex 3H). Self-employment includes a large range of realities, businesses, jobs, and therefore does not seem to represent the same reality across the different Latin American countries of the sample.

In 2009-2010, the head of household being self-employed increases the likelihood of being poor, decreases the likelihood of belonging to the middle sectors (not significant for all countries) or the affluent class (not significant in Mexico).

Chile left apart, the negative impact on poverty displayed by self-employment of household heads is the most consistent in Bolivia and Colombia. The negative impact on middle sector is more consistent in Bolivia and Mexico than in the other countries, and self-employment favors affluency the most in Colombia and Bolivia. On the contrary, it displays the slightest impact in Mexico and Argentina regarding the poor and the affluent side. We observe a decreasing impact along the years in Argentina, Bolivia, Peru and Colombia since 2003.

In Chile as self-employed heads of household are less concentrated in the poor and middle class compared to all other Latin American countries: in Chile 19.7% of the poor occupied heads of household are self-employed, and respectively 21.1% of the middle class occupied and 28.1% of the affluent occupied heads of household. At the other extreme of self-employment pattern in Latin America, in Bolivia, up to 81.8% of the poor occupied are self-employed, and respectively 43.8% of the middle class occupied and 28.9% of the affluent occupied heads of household.

Logically then, being self-employed in Chile decreases the likelihood of being poor (-4.0%), and to be middle class (-14.7%) while it increases the likelihood of being affluent by 18.7% in 2010. These results for Chile are time consistent (always significant), with increasing effects over the past decade: self-employment is becoming more and more an affluent determinant and less and less a poor or middle class one in Chile, while in all other five countries, self-employment remains the situation of almost half of the poor active occupied heads of household .

Other household members' activity status:

As expected, in all countries, although in different proportions, the number of other occupied members in the household displays a positive effect on income classes belonging while the number of unemployed and inactive members in the household displays a negative one (see annex 4 for details).

2. Gender specific effects

The proportion of female headed households is very heterogeneous among Latin American countries ranging from less than 25% in Bolivia, Mexico and Peru to Argentina, over to 35%. Women are also quite well represented in Chile and Colombia as 33% of total households have female heads (table 2).

Gender of heads of household (2009/2010)

All classes	Argentina	Bolivia	Chile	Colombia	Mexico	Peru
male	65,0	75,5	66,9	67,3	75,4	75,0
female	35,0	24,5	33,1	32,7	24,6	25,0

Table 2: Gender of heads of household (2009/2010)

In all countries the wealthier is the household the lower the proportion of female heads, except in Bolivia and Mexico (table 3). The proportion of female headed household is the most important among poor and middle sector households in Argentina and Chile (respectively more than 40% of poor households and more than 30% of middle sector households) while the proportion of female headed households is the most important among affluent Argentinean and Colombian households (around 30%). Higher gaps between affluent and poor households are observed in Chile and in a lesser extent in Argentina.

Gender of heads of household (2009/2010), by classes

Poor	Argentina	Bolivia	Chile	Colombia	Mexico	Peru
male	58,5	77,9	55,5	62,5	78,5	74,6
female	41,5	22,1	44,5	37,5	21,5	25,4

Middle sector	Argentina	Bolivia	Chile	Colombia	Mexico	Peru
male	64,6	73,8	66,5	67,8	75,5	74,2
female	35,4	26,2	33,5	32,2	24,5	25,8

Affluent	Argentina	Bolivia	Chile	Colombia	Mexico	Peru
male	69,4	76,0	74,2	70,2	73,4	76,7
female	30,6	24,0	25,8	29,8	26,6	23,3

Table 3: Gender of heads of household, by income class (2009/2010)

Annexes 5A and 5B present all marginal effects of model 2 multinomial probits for all 6 countries in 2009-2010. Model 2 is similar to model 1, but authorizes specific gender effects of all individual and employment characteristics.

First, it is interesting to compare gender effects on income classes in model 1 and model 2 in the six countries of our panel. Indeed, once controlled for gender specific effects of each individual and employment characteristics, we observe that the gender gap observed previously on class belonging (model 1) is even higher when considering specific gender effects for individual and employment characteristics (model 2).

Age displays relatively few specific gender effects. Indeed, for less than 30 years old, being young is less penalizing for women in Argentina (-12.5pp less likely to be middle sectors and +12.4pp more likely to be affluent), on the contrary it negatively impacts females more than males

in Chile. In what regards heads of households older than 65 years old, there is a significant gender difference in Bolivia, Colombia, Mexico and Peru. Elderly heads positively impacts females more than males in Colombia and Peru. The highest impact is displayed in Bolivia since females have -17pp chances less than males to belong to the middle sectors, while the slightest impact is displayed in Colombia where female older than 65 years old are -4.2pp less likely than males to be poor.

	up to 30 years old		31-40 years old		41-65 years old	more than 65 years old	
	M	F	M	F		M	F
ARGENTINA	--	-	-		Ref.	+	
BOLIVIA	-		-		Ref.	+	less MC
CHILE	-	--	-	--	Ref.	+	
COLOMBIA	-		-	MC	Ref.	+	++
MEXICO	-		-	--	Ref.	+	++
PERU	-		-		Ref.	++	+

Legend:

	Female effect is not different from male effect
MC	Concentrated in middle sectors
less MC	Concentrated in poor and affluent class
-	Negatively impacts income classes
+	Positively impacts income classes

In all countries, except in Peru, tertiary education displays a positive gender impact. In Argentina, Colombia and Chile tertiary education mostly shelters female from being poor (around -4pp less likely to be poor than males with the same level of education). In Mexico, female heads of household with tertiary education are -6.1pp less likely to belong to the middle class than males and +9pp more likely to be affluent than males. In Bolivia female heads with tertiary education are more likely to be affluent than their male counterparts. In Colombia secondary educated women are +6.2pp more likely to be affluent than men. In Peru we observe no specific gender.

	Primary education	Secondary education		Univ. or tertiary education	
		M	F	M	F
ARGENTINA	Ref.	++	+	+	MC
BOLIVIA	Ref.	+		+	++
CHILE	Ref.	+		+	++
COLOMBIA	Ref.	+	++	++	+
MEXICO	Ref.	+		+	++
PERU	Ref.	+		+	

	Single	Couple	
		M	F
ARGENTINA	Ref.	MC	+
BOLIVIA	Ref.	-	+
CHILE	Ref.	MC	+
COLOMBIA	Ref.	MC	+
MEXICO	Ref.	-	+
PERU	Ref.	-	+

In all six countries being in couple displays a positive gender impact on females. The highest impact is displayed in Bolivia (-10.7pp gender difference on the likelihood of being poor, -22.7pp gender difference on the likelihood of belonging to the middle class and +33.4pp on the likelihood of being affluent) while the smallest one is displayed in Mexico (-6.6pp difference between male and female heads of household on the likelihood of being poor) and in Argentina (-6.0pp difference on the likelihood of belonging to the middle sector and +4.7pp difference regarding the likelihood of being affluent).

Belonging to an ethnic minority group only displays a specific gender impact in Chile and Bolivia, but not in the same way. In Chile, belonging to an ethnic group disadvantages females more than males (only significant regarding the poor). Indeed it makes females 7.4% more likely to be poor and males only 3.6% more likely. In Bolivia, female heads belonging to an ethnic minority group are less disadvantaged than male heads: they are 2.7% more likely to be poor and male heads 10.0% more likely.

	Ethnic majority group	Ethnic minority group		Other occupied members		Other unemployed members		Other inactive members	
		M	F	M	F	M	F	M	F
ARGENTINA	Ref.	N.A.	N.A.	+	++	-	--	-	less MC
BOLIVIA	Ref.	--	-	+	++	-		-	
CHILE	Ref.	-	--	+	++	-		--	-
COLOMBIA	Ref.	-		+		-		-	
MEXICO	Ref.	-		+		-		-	
PERU	Ref.	-		+	++	-		-	--

The number of other occupied members displays a positive impact that favors females more than males in almost all countries. The number of unemployed members in the household only displays a gender specific impact in Argentina where it negatively impacts females more than males.

	Agriculture		Industry		Trade		Public and social services		Other services	Unemployment		Inactivity	
	M	F	M	F	M	F	M	F		M	F	M	F
ARGENTINA	-				-	+	+	-	Ref.	-	MC	-	
BOLIVIA	--	-							Ref.	-	MC	--	-
CHILE	-		-	--	-		-	--	Ref.	-		-	
COLOMBIA	--	-					++	+	Ref.	-		--	-
MEXICO	-	--	MC+	MC++		-	+	MC	Ref.	-	MC	-	--
PERU	-		-		-	0	-	+	Ref.	--	-	--	-

: Female effect is not different from male effect

As regards sectors of employment, results vary from country to country:

- Working in agriculture is less penalizing for females than for males in Colombia and Bolivia but negatively impacts females more than males in Mexico.
- Working in industry is more penalizing for females in Chile and polarizes female headed households on middle sector in Mexico.
- Working in trade is less penalizing in Argentina and Peru while in Mexico; it displays no significant impact on males but penalizes women.
- Working in public and social services is more penalizing or less advantaging for females in Argentina, Chile, Colombia and Mexico but displays a positive effect on Peruvian women.
- Being unemployed displays a negative impact on male heads of household in all six countries of our panel. Unemployed female heads of household are more concentrated in middle class than their male counterparts.
- Being inactive displays a negative impact on male heads of household in all six countries, but is less penalizing for female heads in Bolivia, Colombia and Peru. On the contrary female heads of household are more penalized in Mexico.

As seen previously, being self-employed is penalizing for males in all countries except Chile, but is a little less penalizing for females in Colombia and Peru. The notable exception of Chile shows that in this country, being self-employed displays a positive impact on income classes belonging. Though being self-employed is a little less a positive characteristic for females than it is for males.

	No selfemployed	Selfemployed	
		M	F
ARGENTINA	Ref.	-	
BOLIVIA	Ref.	-	
CHILE	Ref.	++	+
COLOMBIA	Ref.	-	MC
MEXICO	Ref.	-	
PERU	Ref.	--	-

3. Multinomial probit of the spouses' likelihood of being poor, middle sector or affluent

Since more than 70% of the households are headed by males, and more than 80% of which are in couple, we decided to focus on these male headed households including spouses' characteristics as well. It is very interesting to compare the husbands and spouses work status so as to understand how spouses contribute to the household's income (table 4). In Peru and in Bolivia a large amount of spouses are active (70% in Peru and 64% in Bolivia), and therefore not much of them are inactive or unemployed. However Peruvian spouses display the highest level of unemployment of the sample we study (12.6%). In all remaining four countries, spouses are mostly inactive (the highest level being in Chile and Mexico, around 62%).

Activity and employment characteristics of spouses and husbands in households

SPOUSES	Argentina	Bolivia	Chile	Colombia	Mexico	Peru
Active occupied	45,8	63,9	34,6	44,8	35,0	70,5
Active unemployed	3,0	5,2	3,4	2,1	0,5	12,6
Inactive	51,2	30,8	62,0	53,1	61,5	16,9
Agriculture*	0,4	35,9	7,0	5,8	6,2	32,1
Industry*	7,8	9,9	7,8	14,3	13,9	9,6
Trade*	0,6	23,4	26,0	25,1	27,0	26,2
Publi and social services*	49,7	16,3	47,2	27,2	45,0	14,3
Other services*	41,5	14,5	12,0	27,6	7,8	17,9
Selfemployed*	17,8	33,7	22,3	45,5	27,5	40,8

* For active occupied spouses only

HUSBANDS	Argentina	Bolivia	Chile	Colombia	Mexico	Peru
Active occupied	80,6	94,0	79,2	85,6	83,9	90,5
Active unemployed	2,9	1,6	3,2	7,4	2,8	4,0
Inactive	16,4	4,4	17,6	6,8	11,1	5,5
Agriculture*	1,5	31,5	14,8	24,8	20,2	32,8
Industry*	17,9	15,6	15,9	12,7	15,8	12,5
Trade*	14,6	10,3	15,5	20,6	14,0	13,1
Publi and social services*	10,9	12,3	18,1	10,0	21,5	14,6
Other services*	55,1	30,3	35,6	32,0	28,5	27,0
Selfemployed*	22,2	45,6	22,3	48,6	26,9	44,6

* For active occupied husbands only

Table 4: Activity and employment status of spouses and husbands (2009/2010)

Model 3 is based on a different population than models 1 and 2, and focuses on male headed households with spouses. The aim of this last model is to identify the relative importance of spouses' decisions and characteristics compared to their husband's ones. As presented in section IV, the empirical framework is a multinomial probit estimation on spouses only, including both their own individual and work characteristics and their husband's characteristics. Annex 6 presents model 3 multinomial probit estimations (marginal effects), in all 6 countries for 2009-2010.

		2009 / 2010			
VARIABLES		Poor	Middle class	Affluent	Exceptions / notes
Spouse individual characteristics	up to 30 years old	+	+ / n.s.	-	Colombia, elderly are not significantly richer
	31-40 years old	+	+	-	
	41-65 years old	Ref.	Ref.	Ref.	
	more than 65 years old	-	- / n.s.	+	
	Primary education	Ref.	Ref.	Ref.	Bolivia, secondary education decreases poverty and tertiary education increases affluency, other effects are insignificant.
	Secondary education	-	-	+	
	Technical education or University	-	-	+	
	Majority group	Ref.	Ref.	Ref.	Effect unclear on middle class, variable not available on Argentina
	Ethnic group	+	n.s.	-	
	Other provinces/regions	Ref.	Ref.	Ref.	Bolivia, living in Sucre positively impacts poverty and negatively impacts affluency
	Capital	-	n.s.	+	
	Spouse active occupied, agriculture	+	n.s.	-	Except in Argentina, spouses in agriculture lower the likelihood to be poor
	Spouse active occupied, industry	+	variable	-	Except Colombia
	Spouse active occupied, trade	Mostly insignificant, and variable across countries			Negative impact on income class in Chile and Mexico
	Spouse active occupied, public and social services	Mostly insignificant			Negative impact on income class in Argentina
Spouse active occupied, other services	Ref.	Ref.	Ref.		
Spouse active unemployed	+	n.s.	-	Observed in all 6 countries	
Spouse inactive	+	+	-	Observed in all 6 countries	
Spouse no self-employed	Ref.	Ref.	Ref.	Chile : polarization on poor and affluent, Bolivia no significant	
Spouse self-employed	+	+	-		
Husband individual characteristics	Husband primary educated	Ref.	Ref.	Ref.	Not significant on middle sectors in Bolivia and Colombia Observed in all 6 countries
	Husband secondary educated	-	-	+	
	Husband technical educated or University	-	-	+	Chile: + on middle class Argentina and Mexico : - on poor, Chile : + on middle class and - on affluent
	Husband active occupied, agriculture	+	-	-	
	Husband active occupied, industry	n.s.	n.s.	n.s.	Globally, negative impact on income classes
	Husband active occupied, trade	Variable across countries			
	Husband active occupied, public and social services	Variable across countries			Positive impact on income classes in Argentina, Colombia and Mexico. Negative one in Chile and Peru
	Husband active occupied, other services	Ref.	Ref.	Ref.	
	Husband active unemployed	+	-	-	Observed in all 6 countries + on middle class in Argentina, not significant in Chile, polarized effect in Mexico
	Husband inactive	+	-	-	
	Husband no self-employed	Ref.	Ref.	Ref.	Chile: all the contrary: - on poor and MC, + on affluent
Husband self-employed	+	-	-		

Table 5: Synthesis of marginal effects signs and significance in MNP Model 3

The impact of spouses' age is very similar to the one observed in model 1 performed on heads of household, the younger a spouse is, the more likely her household will be poor and in a lesser extent belong to the middle sector. The older she is, the more likely her household will become affluent. Conclusions are also similar to model 1 in what regards ethnicity and geographic localization.

It is of interest to focus on the impact of spouses' education and employment status on their household income class belonging.

Spouses' education displays a positive impact on income classes belonging in all countries, although with different magnitudes and with a smaller impact than that displayed by husbands' education in all countries except Colombia. Indeed spouses reaching secondary education decreases the household's likelihood of being poor or middle sector and increases the household's likelihood of being affluent. The highest impacts of spouses' secondary education are displayed in Colombia, Mexico and Chile. The smallest ones are displayed in Peru and Bolivia (and Mexico regarding the middle sector).

Spouses reaching tertiary education do not have a significant impact in Bolivia, but decrease the household's likelihood of being poor in all other countries or middle sector and increases their

likelihood of belonging to the affluent class. The highest impacts of spouses' tertiary education are displayed in Colombia and Chile regarding the middle sector and the affluent and in Argentina and Mexico regarding the poor. The smallest impacts are displayed in Bolivia and Peru.

Working in the agricultural sector displays a negative impact on spouses in all countries except in Argentina where the impact is positive and in Colombia where it is insignificant. Spouses working in the agricultural sector increase the household's likelihood of being poor or middle sector and decreases the likelihood of being affluent. The highest impacts are displayed in Bolivia and Peru while the smallest are displayed in Chile and Mexico. Interestingly, Argentinean spouses working in agriculture decrease their households' likelihood of being poor by -10%.

The other sectors display different impacts regarding the countries. For instance, working in industry has a relatively constant negative impact on spouses. Working in public and social services displays a negative impact in Argentina and Chile and a positive impact in Bolivia (reducing poverty by -10.7%) but is not significant in the remaining countries. Spouses working in public and social services increase the household likelihood of being poor or middle sector and decrease their likelihood of being affluent.

Spouses being unemployed and inactive display a negative impact in all six countries.

Spouses being unemployed increases the household's likelihood of being poor, and decreases their likelihood of being affluent. There is no impact regarding the middle sector. The highest impacts are displayed in Chile, Bolivia and Argentina while the smallest are displayed in Peru, Mexico and Colombia.

Spouses being inactive increase the household's likelihood of being poor or middle sector (not significant in Bolivia and Peru), and decreases the household's likelihood of belonging to the affluent. The impacts are therefore the more burdensome in Chile and Argentina while they are the less disadvantaging in Peru and Mexico.

Spouses being self-employed display a negative impact in Argentina, Colombia, Mexico and Peru, no impact in Bolivia and a polarized one in Chile (it both increases the household's likelihood of being poor and affluent, respectively by 5.4% and 4.2%, and decreases its likelihood of belonging to the middle sector by -9.6%). Indeed, spouses being self-employed increase the household's likelihood of being poor or middle sectors (not significant in Mexico), and decreases their likelihood of being affluent. The highest impacts are displayed in Colombia and Argentina while the smallest ones are displayed in Peru and Mexico.

In terms of husbands' characteristics impact on household's income classes, as seen in model 1, head of household's education always displays a positive impact on income classes belonging. Marginal effects are nevertheless smaller in model 3 than they were in model 1. Indeed, due to the correlation between husbands' and spouses' education, marginal effects in model 1 are capturing a part of spouses' education.

The highest impacts of both husbands' secondary and tertiary education are displayed in Chile, Argentina and Mexico, while the smallest impacts are displayed in Peru and Bolivia.

Husbands' education impact more income classes than spouses' education in all countries except in Colombia and in a lesser extent Argentina (only on the poor side of probits). No significant difference is observed in Peru.

As seen in model 1, husbands working in agriculture display a negative impact on household's income classes in all six countries, but marginal effects are here again lower in model 3 than in model 1, due to the correlation between husbands' and spouses' sectors of activity. The negative impact of agriculture is therefore higher when spouses work in agriculture than when husbands do in Bolivia, Chile and Peru. There are differences in what regards the impact of other sectors. For instance, husbands working in trade display a negative impact in Argentina and Peru (no impact for spouses working in trade). Husbands working in public or social services display a positive impact in Argentina, Colombia and Mexico, a negative one in Chile and Peru (no impact in Bolivia) while the effect of spouses working in public or social services is negative in Chile and Argentina, positive in Bolivia and not significant in the 3 remaining countries.

Husbands being unemployed or inactive display, as in model 1, a striking negative impact on household's income classes belonging in all countries. Marginal effects of unemployment in model 3 are a little smaller than in model 1. Marginal effects of husbands being unemployed are always higher than the ones of spouses being unemployed, the activity status of husbands is therefore more important than the one of their spouses and has a higher impact on household income class. The only two exceptions are Colombia and Peru where spouses being unemployed decrease more the household's likelihood of being affluent than husband's unemployment. Marginal effects of husbands' inactivity in model 3 are smaller than in model 1 except in Bolivia and Mexico. Marginal effects of husbands being inactive are lower than the ones of spouses being inactive in Argentina, Chile and Mexico (Colombia and Peru only on the affluent side of probits), meaning that spouses' inactivity is a striking determinant of income classes belonging. Indeed, the inactivity rate of husbands (it varies from 4.4% to 17.6% across countries) is very low in comparison with spouses' inactivity rate (16.9% to 62%).

In conclusion, female labor market participation is a strong vector of income classes' improvement in Latin American countries, and should be a political economy priority for governments.

Finally, husbands being self-employed display a negative impact in all countries except in Chile and Mexico where it has a polarized effect (both increasing the household's likelihood of being poor and affluent, and decreasing its likelihood of belonging to the middle sector). Marginal effects of husband's self-employment in model 3 are smaller than in model 1 in all countries except in Chile, where self-employment not only displays a positive impact, but has an even higher positive effect once controlled for spouses' characteristics (model 3). Our last specification reinforces this special result for Chile. Marginal effects of husbands' self-employment are higher than the ones of spouses' self-employment in all countries, except in Argentina, Colombia and Mexico where spouses' self-employment decreases in a higher extent the household's likelihood of being affluent.

VI. Conclusion

The study of the characteristics that makes an individual more or less likely to be poor or affluent rather than middle class through the examples of Argentina, Bolivia, Chile, Colombia, Mexico and Peru, show that four main characteristics put middle class households at risk of falling into poverty. They lack education, unemployment, inactivity and self-employment. Furthermore in terms of sector of activity it should be taken into account that the agricultural sector is a strong vector of poverty and is of relevant importance when poor people mostly on it.

On the contrary, education (secondary or tertiary completed) and employment (depending on the sector) somehow promote the middle class social ascension. Therefore, in terms of public policies the priorities should be to promote schooling such as through good access and infrastructures, or through encouraging poor families who send their children to school instead of having them work (such as it has already been done in Mexico or Brazil) for instance. An emphasis could also be made on fighting unemployment and help individuals remain in the labor market or have access to part-time jobs.

A special effort should be made on promoting and favoring female labor market participation (for example increasing child care facilities such as day care centers so that women would not step out of the labor force for a too long time when having children). In the same way, efforts that have been made in Latin America to promote females' education in the past decades should be fulfilled. Poor and middle class female heads of household could also be supported through social allowances for instance. Finally, self-employed workers should be taken into account in the design of social protection policies, pension policies but not only, so as to provide them a safety net.

However, given the large informality and the heterogeneity of Latin American economies, the policies might not display all the expected results.

VII. References

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VIII. Annexes

Country	Conducted by	Type of survey	Survey	Year	Sample size (number of households)	Proportion of total households		
						Poor	Middle class	Affluent
Argentina	INDEC (Instituto Nacional de Estadística y Censos).	household survey	EPH - Encuesta Permanente de Hogares	2000	22487	22,5	45,5	32,0
				2003	25838	28,8	37,2	34,0
			EPHC - Encuesta permanente de hogares continua	2006	37521	23,8	43,3	33,0
				2010	43610	17,9	52,0	30,2
Bolivia	INE (Instituto nacional de estadísticas)	household survey	ECH - Encuesta continua de hogares-condición de vida	2000	4857	31,7	33,1	35,3
				2005	4086	27,6	36,7	35,7
			EH - Encuesta de hogares	2009	4034	23,1	44,9	32,0
Chile	MIDEPLAN	household survey	CASEN - Encuesta de Caracterización Socioeconómica Nacional	2000	65036	19,9	47,1	33,0
				2003	68153	19,1	48,5	32,5
				2006	73720	18,7	49,1	32,2
				2009	71460	17,6	50,4	32,0
Colombia	DANE (Departamento Administrativo Nacional de Estadística)	LSMS	ECV - Encuesta de calidad de vida	2003	22949	37,0	24,3	38,7
				2008	13595	25,8	39,5	34,7
				2010	14787	20,3	46,9	32,8
Mexico	INEGI (Instituto nacional de estadística y geografía)	household survey	ENIGH - Encuesta nacional de ingresos y gastos en los hogares	2000	10108	20,0	48,0	32,0
				2004	22595	17,2	52,0	30,7
				2006	20875	17,1	52,9	30,0
				2010	27655	16,8	53,4	29,8
Peru	INEI (instituto nacional de estadísticas e informática)	household survey	ENAHO - Encuesta nacional de hogares - Condiciones de vida y pobreza	2000	3721	23,6	45,8	30,6
				2003	12580	21,7	46,0	32,3
				2006	20577	21,6	47,3	31,2
				2010	21496	20,0	50,7	29,3

Annex 1: Data presentation by country: survey, sample size, proportions of poor, middle class and affluent households

Annex 4: Other household members' activity status, model 1

As expected, in all countries, although in different proportions, the number of other occupied members in the household displays a positive effect on income classes belonging while the number of unemployed and inactive members in the household displays a negative one.

Indeed, in 2009-2010, each additional occupied member in the household decreases the likelihood of being poor and increases the likelihood of being affluent (annex 4.A). The impact on the middle sector is not significant in 2009-2010. On previous years, two patterns emerge: In Chile (and Colombia only in 2003) the effect is positive on middle class, additional occupied household members being a middle class determinant as well as an affluent one, and thus prevent from falling into poverty. In Bolivia, Peru (and Argentina only in 2006), the effect is negative on middle class, additional occupied household members being a determinant of the affluent class only.

High impacts of additional occupied members are noticeable in Chile and Colombia while low impacts are observed in Peru and Mexico.

Considering time evolution of these effects, we can identify 3 patterns: Occupied members in the household; we observe an increasing impact along the years in Chile and Mexico. On the contrary, we observe a decreasing impact along the years in Argentina and Colombia. Regarding Peru and Bolivia, there is an increasing impact along the years regarding the poor, while it is the contrary as far as the middle sector and the affluent are concerned.

		Poor				Middle class				Affluent			
		2000	2003/2004	2005/2006	2009/2010	2000	2003/2004	2005/2006	2009/2010	2000	2003/2004	2005/2006	2009/2010
Number of other occupied household members	Argentina	-0.090***	-0.047***	-0.040***	-0.065***	n.s.	n.s.	-0.012**	n.s.	0.101***	0.041***	0.052***	0.066***
	Bolivia	-0.044***	n.a.	-0.041***	-0.049***	-0.030**	n.a.	-0.024**	n.s.	0.074***	n.a.	0.065***	0.061***
	Chile	-0.112***	-0.123***	-0.124***	-0.136***	0.016***	0.016***	0.023***	n.s.	0.095***	0.107***	0.101***	0.130***
	Colombia	-0.129***	-0.106***	-0.102***	-0.092***	n.s.	0.019***	n.s.	n.s.	0.121***	0.087***	0.100***	0.093***
	Mexico	-0.038***	-0.031***	-0.015***	-0.044***	n.s.	n.s.	n.s.	n.s.	0.034***	0.028***	0.013***	0.042***
	Peru	-0.029***	-0.020***	-0.030***	-0.036***	-0.021*	-0.014**	n.s.	n.s.	0.050***	0.035***	0.034***	0.041***

Annex 4.A: Other occupied members marginal effects of MNP Model 1 (2000-2010)

Annex 4.B shows that each additional unemployed member in the household increases the likelihood of being poor or middle sector, and decreases the likelihood of being affluent. The highest impacts are displayed in Argentina and Chile while the smallest one is observed in Peru and Bolivia (except for middle sectors). We observe an increasing impact along the years in Argentina and in Peru regarding the affluent while the impact decreases along the years in the other countries and in Peru regarding the poor and the middle sector.

		Poor				Middle class				Affluent			
		2000	2003/2004	2005/2006	2009/2010	2000	2003/2004	2005/2006	2009/2010	2000	2003/2004	2005/2006	2009/2010
Number of other unemployed household members	Argentina	0.069***	0.111***	0.109***	0.094***	0.055***	0.051***	0.057***	0.060***	-0.124***	-0.163***	-0.167***	-0.154***
	Bolivia	n.s.	n.a.	n.s.	n.s.	0.100***	n.a.	n.s.	0.065**	-0.082***	n.a.	n.s.	-0.070**
	Chile	0.102***	0.105***	0.102***	0.081***	0.062***	0.068***	0.052***	0.050***	-0.164***	-0.172***	-0.154***	-0.131***
	Colombia	0.067***	-0.027*	n.s.	0.057***	0.045**	0.045**	0.068***	0.035*	-0.112***	n.s.	-0.084***	-0.092***
	Mexico	0.048**	0.036**	0.066***	0.059**	n.s.	0.058**	0.087***	0.035**	-0.109***	-0.095***	-0.153***	-0.093***
	Peru	-0.044***	n.s.	n.s.	0.023***	0.087***	0.082***	0.069***	0.051***	-0.043*	-0.081***	-0.078***	-0.074***

Annex 4.B: Other unemployed members marginal effects of MNP Model 1 (2000-2010)

Each additional inactive member in the household increases the likelihood of being poor or middle sectors and decreases the likelihood of being affluent (annex 4.C). The highest impact is displayed in Argentina while the slightest ones are observed in Peru and Bolivia. The impact increases along the years in Argentina (all social classes), Bolivia, Colombia and Mexico (middle sectors and affluent only regarding those last three countries). On the contrary the impact decreases in Chile (except regarding the middle sectors) and in Peru.

		Poor				Middle class				Affluent			
		2000	2003/2004	2005/2006	2009/2010	2000	2003/2004	2005/2006	2009/2010	2000	2003/2004	2005/2006	2009/2010
Number of other inactive household members	Argentina	0.052***	0.051***	0.064***	0.083***	0.041***	0.036***	0.052***	0.068***	-0.093***	-0.086***	-0.116***	-0.150***
	Bolivia	n.s.	n.a.	n.s.	0.024**	0.037***	n.a.	0.067***	0.046***	-0.035***	n.a.	-0.050***	-0.070***
	Chile	0.056***	0.057***	0.054***	0.048***	0.039***	0.035***	0.038***	0.046***	-0.096***	-0.092***	-0.092***	-0.094***
	Colombia	0.051***	n.s.	0.057***	0.029***	0.026***	0.054***	0.052***	0.086***	-0.077***	-0.056***	-0.109***	-0.115***
	Mexico	0.046***	0.042***	0.044***	0.045***	0.024***	0.042***	0.037***	0.045***	-0.069***	-0.084***	-0.081***	-0.090***
Peru	-0.057***	-0.031***	n.s.	0.024***	n.s.	0.044***	0.021**	0.023***	0.050***	n.s.	-0.021**	-0.046***	

Annex 4.C: Other inactive members marginal effects of MNP Model 1 (2000-2010)

In conclusion, active occupied members increase the likelihood of affluency and decrease the likelihood of being poor. Unemployed and inactive members are determinants of poor and middle class and not of the affluent class.

VARIABLES	ARGENTINA			BOLIVIA			CHILE			COLOMBIA			MEXICO			PERU		
	2010			2009			2009			2010			2010			2010		
	Poor	Middle sector	Affluent	Poor	Middle sector	Affluent	Poor	Middle sector	Affluent	Poor	Middle sector	Affluent	Poor	Middle sector	Affluent	Poor	Middle sector	Affluent
Male	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.
Female	0.027 (0.021)	0.088*** (0.028)	-0.115*** (0.025)	0.207** (0.084)	0.109 (0.086)	-0.317*** (0.049)	0.034 (0.025)	0.087** (0.037)	-0.121*** (0.037)	0.154*** (0.036)	0.023 (0.044)	-0.177*** (0.038)	0.107*** (0.049)	-0.115** (0.051)	0.008 (0.042)	0.094** (0.037)	0.064 (0.041)	-0.158*** (0.034)
up to 30 years old	0.128*** (0.015)	0.051*** (0.016)	-0.179*** (0.010)	0.004 (0.027)	0.120*** (0.033)	-0.124*** (0.028)	0.032*** (0.012)	0.061*** (0.016)	-0.093*** (0.015)	0.051*** (0.018)	0.107*** (0.021)	-0.157*** (0.018)	0.161*** (0.016)	0.028* (0.016)	-0.189*** (0.010)	0.065*** (0.016)	0.060*** (0.018)	-0.125*** (0.015)
31-40 years old	0.100*** (0.013)	0.003 (0.014)	-0.103*** (0.011)	0.008 (0.024)	0.093*** (0.030)	-0.101*** (0.026)	0.032*** (0.008)	0.036*** (0.012)	-0.068*** (0.011)	0.035** (0.015)	0.089*** (0.018)	-0.123*** (0.017)	0.100*** (0.011)	0.044*** (0.013)	-0.145*** (0.010)	0.064*** (0.011)	0.032** (0.014)	-0.096*** (0.012)
41-65 years old	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.
more than 65 years old	-0.114*** (0.009)	0.037** (0.018)	0.077*** (0.019)	-0.080*** (0.022)	0.049 (0.044)	0.032 (0.044)	-0.074*** (0.007)	-0.030* (0.017)	0.103*** (0.019)	-0.026* (0.015)	-0.052** (0.025)	0.078*** (0.027)	-0.033*** (0.010)	0.003 (0.018)	0.031* (0.018)	-0.044*** (0.009)	-0.054*** (0.018)	0.098*** (0.019)
Female*0-30 years old	0.001 (0.020)	-0.125*** (0.028)	0.124*** (0.029)	0.068 (0.062)	-0.018 (0.070)	-0.050 (0.069)	0.066*** (0.024)	-0.059* (0.033)	-0.008 (0.036)	0.015 (0.029)	0.017 (0.040)	-0.033 (0.039)	-0.005 (0.023)	0.001 (0.035)	0.004 (0.035)	0.040 (0.037)	-0.070 (0.045)	0.030 (0.045)
Female*31-41 years old	0.001 (0.017)	-0.036 (0.025)	0.035 (0.025)	-0.032 (0.045)	-0.020 (0.065)	0.052 (0.066)	0.023 (0.014)	0.021 (0.022)	-0.044* (0.023)	-0.024 (0.021)	0.075** (0.033)	-0.050 (0.032)	-0.012 (0.018)	0.055** (0.027)	-0.043* (0.026)	-0.016 (0.020)	0.003 (0.032)	0.013 (0.033)
Female*More 65 years old	0.009 (0.020)	-0.017 (0.026)	0.008 (0.027)	0.080 (0.064)	-0.170** (0.070)	0.090 (0.080)	-0.015 (0.012)	-0.009 (0.026)	0.024 (0.031)	-0.042** (0.021)	-0.011 (0.041)	0.054 (0.043)	0.015 (0.021)	-0.088*** (0.031)	0.073** (0.032)	0.043** (0.022)	-0.033 (0.031)	-0.010 (0.032)
Primary education	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.
Secondary education	-0.095*** (0.007)	-0.073*** (0.012)	0.167*** (0.013)	-0.093*** (0.018)	-0.034 (0.029)	0.127*** (0.029)	-0.098*** (0.005)	-0.121*** (0.010)	0.218*** (0.011)	-0.120*** (0.010)	-0.063*** (0.018)	0.183*** (0.018)	-0.101*** (0.006)	-0.105*** (0.014)	0.207*** (0.014)	-0.086*** (0.007)	-0.075*** (0.015)	0.161*** (0.015)
Technical education or University	-0.187*** (0.006)	-0.261*** (0.013)	0.448*** (0.013)	-0.142*** (0.021)	-0.166*** (0.033)	0.308*** (0.033)	-0.146*** (0.005)	-0.469*** (0.012)	0.614*** (0.012)	-0.172*** (0.010)	-0.373*** (0.020)	0.546*** (0.020)	-0.165*** (0.005)	-0.338*** (0.013)	0.503*** (0.013)	-0.156*** (0.007)	-0.282*** (0.017)	0.437*** (0.017)
Female*Secondary education	0.007 (0.014)	0.026 (0.020)	-0.033* (0.020)	0.054 (0.053)	-0.041 (0.063)	-0.013 (0.058)	0.000 (0.010)	0.003 (0.019)	-0.003 (0.021)	-0.026 (0.019)	-0.037 (0.031)	0.062* (0.034)	-0.019 (0.015)	-0.038 (0.026)	0.056** (0.026)	-0.003 (0.018)	-0.017 (0.029)	0.020 (0.030)
Female*Technical education or University	-0.030* (0.016)	0.058*** (0.022)	-0.028 (0.021)	-0.034 (0.059)	-0.167** (0.069)	0.200*** (0.076)	-0.037* (0.019)	0.029 (0.028)	0.009 (0.028)	-0.047* (0.028)	-0.004 (0.043)	0.052 (0.041)	-0.018 (0.023)	-0.071** (0.031)	0.090*** (0.030)	0.003 (0.032)	0.035 (0.037)	-0.038 (0.032)
Single	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.
Couple	-0.046*** (0.010)	0.049*** (0.013)	-0.002 (0.013)	0.073*** (0.026)	0.124*** (0.036)	-0.197*** (0.037)	-0.023** (0.009)	0.043*** (0.014)	-0.021 (0.015)	-0.012 (0.016)	0.058*** (0.021)	-0.046** (0.022)	0.053*** (0.011)	0.037** (0.017)	-0.090*** (0.016)	0.034*** (0.010)	0.033** (0.017)	-0.067*** (0.017)
Female*Couple	0.013 (0.016)	-0.060*** (0.022)	0.047** (0.022)	-0.107*** (0.026)	-0.227*** (0.056)	0.334*** (0.062)	-0.016 (0.011)	-0.085*** (0.021)	0.101*** (0.024)	-0.013 (0.022)	-0.073** (0.033)	0.086** (0.035)	-0.066*** (0.012)	0.001 (0.029)	0.065** (0.029)	-0.068*** (0.015)	-0.017 (0.034)	0.086** (0.036)
Majority group	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.
Ethnic group	N.A.	N.A.	N.A.	0.100*** (0.019)	0.029 (0.025)	-0.129*** (0.023)	0.036*** (0.009)	-0.004 (0.017)	-0.032* (0.018)	0.040*** (0.015)	-0.024 (0.020)	-0.016 (0.021)	0.091*** (0.009)	-0.016 (0.012)	-0.075*** (0.011)	0.070*** (0.008)	0.016 (0.011)	-0.086*** (0.011)
Female*Ethnic group				-0.073** (0.030)	0.025 (0.049)	0.048 (0.048)	0.038** (0.017)	-0.027 (0.031)	-0.011 (0.033)	0.003 (0.023)	-0.015 (0.037)	0.012 (0.039)	-0.019 (0.013)	0.006 (0.023)	0.013 (0.023)	-0.009 (0.014)	-0.023 (0.024)	0.032 (0.025)
Other provinces/regions	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.
Capital Buenos Aires	-0.050*** (0.007)	-0.019** (0.009)	0.070*** (0.009)	0.098*** (0.023)	0.052** (0.026)	-0.151*** (0.023)	-0.031*** (0.006)	-0.030*** (0.010)	0.061*** (0.010)	-0.096*** (0.015)	-0.052** (0.022)	0.148*** (0.022)	-0.045*** (0.007)	0.012 (0.011)	0.033*** (0.010)	-0.107*** (0.010)	-0.090*** (0.014)	0.198*** (0.014)
Female*Capital	-0.005 (0.011)	-0.011 (0.016)	0.016 (0.015)	0.012 (0.039)	-0.093* (0.052)	0.081 (0.056)	-0.001 (0.010)	-0.024 (0.018)	0.026 (0.019)	-0.000 (0.032)	0.015 (0.037)	-0.014 (0.033)	-0.007 (0.015)	0.003 (0.021)	0.004 (0.019)	-0.016 (0.024)	0.041 (0.028)	-0.024 (0.024)

Annex 5A: Multinomial Probit estimation of variable poor/middle sector/affluent with female specific effects (Part 1)

VARIABLES	ARGENTINA			BOLIVIA			CHILE			COLOMBIA			MEXICO			PERU		
	2010			2009			2009			2010			2010			2010		
	Poor	Middle sector	Affluent	Poor	Middle sector	Affluent	Poor	Middle sector	Affluent	Poor	Middle sector	Affluent	Poor	Middle sector	Affluent	Poor	Middle sector	Affluent
up to 30 years old	0.141***	0.023	-0.165***	0.011	0.082***	-0.094***	0.052***	0.064***	-0.115***	0.106***	0.102***	-0.208***	0.224***	-0.012	-0.212***	0.135***	0.021	-0.156***
31-40 years old	0.116***	0.011	-0.127***	0.071***	0.059*	-0.130***	0.067***	0.054***	-0.121***	0.098***	0.085***	-0.183***	0.138***	0.034***	-0.172***	0.094***	0.050***	-0.145***
41-65 years old	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.
more than 65 years old	-0.113***	-0.015	0.127***	-0.090***	0.028	0.062	-0.076***	-0.006	0.082***	-0.022	0.001	0.021	-0.054***	-0.007	0.060***	-0.015	-0.067***	0.082***
Primary education	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.
Secondary education	-0.062***	-0.015	0.077***	-0.049*	0.047	0.002	-0.046***	-0.044***	0.090***	-0.089***	-0.040*	0.129***	-0.074***	-0.024*	0.099***	-0.037***	-0.030*	0.067***
Technical education or University	-0.134***	-0.128***	0.262***	-0.039	-0.085	0.123**	-0.076***	-0.260***	0.336***	-0.108***	-0.263***	0.370***	-0.122***	-0.170***	0.292***	-0.092***	-0.168***	0.259***
Majority group	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.
Ethnic group	N.A.	N.A.	N.A.	0.095***	0.010	-0.105***	0.023***	0.044***	-0.067***	0.026*	-0.006	-0.020	0.080***	-0.025**	-0.055***	0.051***	0.003	-0.053***
Other provinces/regions	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.
Capital Buenos Aires	-0.059***	-0.027***	0.086***	0.083***	0.053*	-0.137***	-0.034***	-0.028***	0.062***	-0.085***	-0.070***	0.155***	-0.036***	0.025**	0.011	-0.089***	-0.081***	0.171***
Active occupied, agriculture	-0.100***	0.080	0.020	0.224***	0.015	-0.239***	0.081*	0.108***	-0.189***	0.045	0.011	-0.056	0.076	0.058	-0.134***	0.206***	-0.036	-0.171***
Active occupied, industry	0.050*	0.003	-0.053*	0.196**	-0.087	-0.109**	0.066	0.017	-0.083**	0.040	-0.071*	0.031	0.028	0.078*	-0.106**	0.105***	-0.042	-0.062**
Active occupied, trade	-0.019	0.044	-0.025	0.095	0.010	-0.105***	0.072*	0.026	-0.099***	-0.020	-0.030	0.049	0.007	0.069*	-0.076**	0.022	-0.050**	0.029
Active occupied, public and social services	0.023*	0.071***	-0.094***	-0.107**	0.020	0.087	0.120***	-0.000	-0.120***	0.020	-0.070*	0.050	-0.026	0.065*	-0.040	0.022	-0.009	-0.013
Active occupied, other services	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.
Active unemployed	0.197***	0.042	-0.239***	0.242***	-0.074	-0.167***	0.363***	-0.076	-0.287***	0.198***	-0.077	-0.121***	0.066	0.112	-0.177***	0.164***	-0.020	-0.144***
Inactive	0.126**	0.138***	-0.264***	0.173***	-0.001	-0.172***	0.190***	0.129***	-0.318***	0.128***	0.082***	-0.210***	0.085***	0.096***	-0.182***	0.104***	-0.013	-0.091***
No self employed	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.
Selfemployed	0.053***	0.053***	-0.106***	-0.034	0.027	0.007	0.054***	-0.096***	0.042*	0.058***	0.098***	-0.157***	0.036***	0.013	-0.050***	0.020*	0.075***	-0.095***
Husband Primary education	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.
Husband Secondary education	-0.056**	-0.039***	0.095***	-0.055**	-0.024	0.078**	-0.061***	-0.075***	0.136**	-0.074***	0.002	0.072***	-0.075***	-0.053***	0.128***	-0.043***	-0.028*	0.071***
Husband Technical education or University	-0.110***	-0.186***	0.297***	-0.092**	-0.082*	0.173***	-0.116***	-0.314***	0.430***	-0.098***	-0.238***	0.335***	-0.129***	-0.216***	0.345***	-0.108***	-0.158***	0.266***
Husband Active occupied, agriculture	0.097***	-0.098**	0.001	0.282***	-0.138**	-0.144***	0.050***	0.026*	-0.076***	0.149***	-0.055**	-0.094***	0.212***	-0.127***	-0.085***	0.191***	-0.093***	-0.098***
Husband Active occupied, industry	-0.026**	-0.002	0.027*	0.027	-0.003	-0.024	-0.002	0.063**	-0.060**	-0.003	0.002	0.001	-0.023*	0.026	-0.003	0.032	-0.020	-0.012
Husband Active occupied, trade	0.052**	0.028	-0.079**	0.022	-0.095**	0.072	0.003	0.028	-0.031*	-0.000	-0.016	0.017	-0.007	0.025	-0.018	0.056**	-0.018	-0.038**
Husband Active occupied, public and social services	-0.043***	-0.021	0.064***	-0.027	-0.009	0.036	-0.007	0.033**	-0.026*	-0.030	-0.113***	0.142***	-0.026**	-0.004	0.030**	0.046**	0.014	-0.060**
Husband Active occupied, other services	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.
Husband Active unemployed	0.271***	-0.169***	-0.103***	0.519***	-0.274***	-0.245***	0.416***	-0.156***	-0.261***	0.244***	-0.187***	-0.057	0.279***	-0.144***	-0.135***	0.329***	-0.201***	-0.122***
Husband Inactive	0.077***	0.036*	-0.113***	0.450***	-0.285***	-0.165***	0.123***	-0.001	-0.121***	0.244***	-0.135***	-0.109***	0.047***	-0.131***	0.084***	0.145***	-0.107***	-0.037
Husband No selfemployed	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.
Husband Selfemployed	0.092**	-0.005	-0.086**	0.160***	-0.053*	-0.106***	-0.057***	-0.147***	0.205***	0.147***	-0.012	-0.135***	0.048***	-0.076***	0.028**	0.134***	-0.033**	-0.100**
Observations	22,549	22,549	22,549	2,548	2,548	2,548	41,738	41,738	41,738	8,064	8,064	8,064	18,271	18,271	18,271	14,063	14,063	14,063

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Annex 6: Probit multinomial of variable poor/middle sectors/affluent for spouses