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Can female entrepreneurs boost social mobility in developing countries? An institutional analysis

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ABSTRACT

Entrepreneurship has been linked to economic development at the regional and national levels, yet the micro-economic nuances of entrepreneurial diversity and the challenges that different entrepreneurs face in producing social benefits remain unexplored. Numerous studies have recognised that a gender gap exists not only in entrepreneurship but also in development outcomes, such as firm performance and poverty alleviation. Few, though, have considered the role of institutions in incentivising women and men in the generational improvement process, such as social mobility. Hence, does the institutional environment framing gender differences constrain or enable potential effects of female (compared with male) entrepreneurs on microeconomic outcomes such as social mobility? We investigate the institutional influence on the probability of becoming a female entrepreneur and the effect of this decision on social mobility in developing countries. We test gender comparisons through two-stage probit least squares (2SPLS), showing that post-materialism, autonomy, network membership, democracy, and respect for human rights have positive effects on both women's and men's self-employment jointly as well as female self-employment specifically. We also show that the decision to become an entrepreneur has a greater influence on social mobility for female than for male entrepreneurs. Policy implications regarding gender equality are discussed.

1. Introduction

It has been argued that the solution to some of the main social problems in both developed and developing countries (i.e. exclusion, poverty, and inequality) requires a strategy based on inclusion and gender equality that is associated with entrepreneurship (McMullen, 2011; Patel et al., 2018; Pathak and Muralidharan, 2018; Scott et al., 2012). In this respect, the role of not only male but also female entrepreneurs could generate a social transition that alleviates poverty (Bruton et al., 2013; Hechavarria et al., 2019; Rosca et al., 2020). In line with this suggestion, a significant number of articles have been published in recent years in the field of female entrepreneurship (see Brush et al. (2020) for a thorough discussion). However, few of these articles have considered the context of developing countries (Yousafzai et al., 2019) or investigated how institutions might affect male and female entrepreneurship differently, in turn having an impact on outcomes such as inclusion and social mobility (Lerner et al., 1997; Mejía and Melén-dez, 2014). For example, Terjesen and Lloyd (2015) showed that some African and East Asian countries lack a solid financial and educational structure that provides support for new ventures led by women. Terje-sen and Lloyd's (2015) report about the female entrepreneurship index also determined that female entrepreneurs in Latin America require a better regulative and legal system that reduces uncertainty in local markets and helps them to start looking for international customers. If the context matters, then it is relevant to comprehend how the gap between women and men is augmented or reduced by the characteristics of each national context (Marlow, 2019; Yousafzai et al., 2019), helping entrepreneurs to generate economic and social benefits.

The foundations of institutions have assisted in understanding the context in which individuals make continual economic transactions and

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decisions, redistributing wealth across society (Davanzati, 2006). Acemoglu et al. (2014) and Rodrik (2003) recognised that institutions are effectively the frame in which productive factors operate to enhance the national income. According to Rodrik (2003), institutions affect development through different endowments (e.g. capital, labour, and knowledge, amongst others), which are directly linked to growth and development. Thus, institutional economics (North, 1990, 2005) is considered to be a viable framework for analysing those conditioning factors that affect growth, productivity, and development (Leite et al., 2014).

Hausmann and Rodrik (2003) and Rodrik (2003) suggested that firms and entrepreneurs explain countries' national income, which, at the same time, is highly influenced by their institutional context. In this sense, Urbano et al. (2019) found abundant literature about institutions, entrepreneurship, and development. However, there is room for further explorations, especially focusing on other types of entrepreneurship. Drawing on this idea, Dean et al. (2019) claimed that there is a lack of studies testing empirically how institutions affect both female and male entrepreneurs who are also contributing to welfare and economic development.

Aparicio et al. (2016) and Welter (2011) suggested that future research should produce a broader analysis of institutions and entrepreneurship that pays special attention to developing countries. More empirical research is needed because entrepreneurship in emerging economies acts as a policy mechanism to solve social problems. For instance, Bruton et al. (2009, 2013) suggested that entrepreneurship is especially useful for competitiveness and for the alleviation of poverty in emerging economies since entrepreneurial activity has become an alternative to participation in the labour market in these countries. Entrepreneurial activity, however, has also been constrained by different issues, such as the unofficial economy, a lack of infrastructure for entrepreneurs, and the violation of human rights, especially for women (Aidis et al., 2007). Stephan and Uhlaner (2010) showed that some of these problems have been overcome thanks to the existence of societal values (e.g. post-materialism, collectivism, and association) as a vehicle that supports entrepreneurial activity. Audretsch and Moog (2020) added democracy to this discussion. This defines a social configuration around political and economic decisions in favour of markets in which everybody can participate actively through productive behaviours (such as entrepreneurship). Despite the existence of evidence and discussions about these contextual elements and entrepreneurship, little has been said about their influence on closing the gender gap (Hechavarria et al., 2017) to generate outcomes beyond economic development (Hechavarría et al., 2019), such as social mobility (Lora and Castellani, 2013).

In this context, this paper investigates the institutional influence on the probability of becoming a female entrepreneur and the impact of this decision on social mobility in developing countries. For comparison purposes, apart from studying female entrepreneurship, we analyse the influence of institutional factors on general entrepreneurship (self-employment) and on male self-employment and their relative importance for social mobility. We support our hypotheses using the conceptual framework of institutional economics, which explains those conditioning factors that promote entrepreneurship amongst both women and men and their effect on social mobility. Using information from the period 2011–2014, from the unique data set of the World Values Survey (WVS), complemented with information at the national level from the International Monetary Fund (IMF) and Transparency International, we find that female entrepreneurs are more influenced by institutions (post-materialism, autonomy, membership of an organisation, democracy, and respect for human rights), while male entrepreneurs are affected only by autonomy, membership of an organisation, and respect for human rights. We also find that both male and female self-employment contributes to social mobility in developing countries, despite the smaller impact of male entrepreneurs relative to their female counterparts. We contribute to the literature by highlighting not only that institutions matter for both female and male entrepreneurship in developing countries but that they matter in different ways. Consistent with a microeconomic approach, we analyse the manner in which institutions affect male entrepreneurship, which is different from the way in which they influence female entrepreneurship. This research also reaffirms the importance of entrepreneurship (and especially female entrepreneurship) as a conduit for institutions and as a means of enhancing social mobility in developing countries.

After this introduction, the next section of this article develops and posits the main hypotheses about how and why institutions affect men and women differently, drawing on the extant literature. Afterwards, we describe the data and methodology. Next, we present the results and, subsequently, discuss some of the policy implications related to the significance of female entrepreneurship for social mobility. Finally, conclusions and future research lines are presented.

2. Theoretical framework

2.1. Institutions and entrepreneurship

As noted earlier, this article uses institutional economics (North, 1990, 2005) to explain why institutions may affect male and female entrepreneurship differently. Institutions are defined as the "rules of the game in a society, or more formally, […] the constraints that shape human interaction" (North, 1990, p. 3). Institutions can be formal, such as regulations, contracts, and procedures, or informal, such as the culture, values, or social norms of a particular society. As North (1990) suggested, formal institutions intend to reduce transaction costs based on regulations, whereas informal institutions exist to reduce the uncertainty caused by the decision making of individuals (North, 2005). One additional element of this framework is related to the interactions between formal and informal institutions. Here, some regulations could be efficient depending on the cultural values and intentionality of a society. Thus, informal institutions constrain the nature of formal institutions and vice versa. Nevertheless, whereas formal institutions can change over a short period of time, informal institutions change more slowly (Williamson, 2000). Although these two distinguished groups exist, the literature has emphasised institutions in general as mechanisms that indirectly affect economic development (cf. Acemoglu et al., 2014). Indeed, Williamson (2000) analysed institutions through four clear layers – culture; regulations; governance structure, associations, and transactions; and resource allocation and individual characteristics in terms of employment – to explain differences across countries.

More than differentiating between formal and informal institutions, the recent literature has revealed growing recognition of the significant influence that institutional factors, in addition to other factors, have on the entrepreneurial process (Urbano et al., 2019), especially in the case of female entrepreneurship (Hechavarría et al., 2018; Langowitz and Minniti, 2007; Yousafzai et al., 2015) as well as in the context of developing countries (Centindamar et al., 2012; Lerner et al., 1997; Maas et al., 2014). In this sense, Centindamar et al. (2012) highlighted the beneficial impact of entrepreneurial activity for both men and women in Turkey. Their findings suggest that the impact of human capital on the likelihood of becoming an entrepreneur is greater for women than for men. They also reflect the importance of institutions with respect to entrepreneurial activity and suggest that these factors contribute significantly to the improvement of economic development. Lerner et al. (1997) described the social structures that relate to female entrepreneurs while keeping in mind how work, family, and organised social life vary between developed and developing countries. Research has shown that social learning (entrepreneurial socialisation), network affiliation (contacts and membership of organisations), human capital (level of education and business skills), and contextual influences (location and socio-political variables) affect women's enterprise creation and economic development in the context of non-OECD countries.

This evidence is consistent with Williamson's (2000) ideas about

institutions as a set of four layers. In this regard, the entrepreneurship literature has been interested in exploring cultural values through post-materialism (Uhlaner and Thurik, 2007), regulations through property and human rights (McMullen and Bergman, 2017), governance structure, associations, and transactions through networks (Scott et al., 2019), and individual characteristics in favour of productivity through autonomy (Urbano et al., 2021).

Post-materialism, one of the institutional factors included amongst social attitudes, refers to the degree to which the population of a society values non-materialistic life goals, such as personal identification, esteem, self-expression, subjective welfare, and quality of life (Inglehart and Welzel, 2005, 2009). Much of the literature on entrepreneurship has proposed that cultural values and social attitudes play important roles in entrepreneurial behaviour, especially in the case of female entrepreneurship (BarNir et al., 2011; Hechavarría et al., 2017; Manolova et al., 2007). Perceptual variables, such as the fear of failure, the perception of one's own capabilities, and the perception of opportunities and role models, are the most important drivers of entrepreneurship (Arenius and Minniti, 2005; Noguera et al., 2013; Romani et al., 2012). Cultural values, such as self-expression, are also important for female entrepreneurs in developing countries or economies in transition (Alammari et al., 2019; Smallbone and Welter, 2001; Welter and Smallbone, 2008). In the course of their investigations, various authors have treated the family context as an additional cultural factor. For example, Langowitz and Minniti (2007) observed that, in societies in which the role of women is closely tied to family responsibilities, entrepreneurial activity is perceived as less desirable. Furthermore, Jennings and McDougald (2007) found that the family context might have a greater impact on women than on men. Along the same lines, role models are important because of their ability to enhance self-efficacy (Minniti and Nardone, 2007), but women appear to need a more personal role model than men (BarNir et al., 2011). In contrast, Uhlaner and Thurik (2007) explored how post-materialism, social factors, education, and life satisfaction might explain the differences in entrepreneurial activity across countries. Their findings confirm the significance of these aspects in predicting entrepreneurial activity. Consistent with Inglehart and Welzel (2005), their study highlighted the negative effects of post-materialism on entrepreneurial activity. Morales and Holtschlag (2013) also presented evidence that post-materialism decreases a person's likelihood of becoming an entrepreneur; in fact, they demonstrated that the effect is more negative in countries with high levels of entrepreneurship. From this review of the research, it is apparent that post-materialism has a significant impact on entrepreneurial activity and even more so on female entrepreneurship. Thus, the following hypotheses are proposed:

Hypothesis 1a: Post-materialism has a positive effect on the probability of becoming an entrepreneur.
Hypothesis 1b: Post-materialism has a more positive effect on the probability of women becoming entrepreneurs than on that of men.

The support from the society and its values also needs solid market structures, which implies that individuals can make decisions freely. In this regard, Williamson (2000) suggested that the analysis of institutions is conditioned, amongst others, by the individual capacity to observe and learn from the market. Although part of this theoretical narrative is based on the neoclassical point of view, in which individuals are constrained by their income level, preferences, and incentives, autonomy is a factor that plays an important role in the decision-making process (Baumol, 1990). Market fluctuations thus define the economic situation of every regional and national economy, imposing new conditions on individuals, who, through their autonomy, enter entrepreneurship motivated by either opportunities or necessity issues. The latter aspect is common in Latin American countries and other emerging economies, which are characterised by necessity entrepreneurship (Urbano and Aparicio, 2016). Puente et al. (2019) explained that, even though this type of entrepreneurship predominates in the region, nuances exist that make the analysis more complex. That is, necessity-driven entrepreneurship is not bad per se as, in some cases, entrepreneurs are able to scale up their entrepreneurial activity thanks to opportunity recognition. However, in other cases, entrepreneurs are heavily constrained by market restrictions and competition, reducing their capacity for autonomy and therefore their intentions and actions, which are crucial to the decision to start a business (Minniti and Nardone, 2007). Previous studies have shown that women perceive their autonomy and the entrepreneurial environment less favourably than men. As a consequence, the low perception of autonomy affects the final decision to create a business, especially in sectors that are traditionally considered to be male (Anna et al., 2000; Noguera et al., 2013; Verheul et al., 2005). Hence, creating a business may require a high level of autonomy, and women may find this difficult (Dolinsky and Caputo, 2003; Hechavarría et al., 2017; Romani et al., 2012). Improving this characteristic will raise perceptions of venture feasibility, thus increasing the perception of opportunities (Krueger et al., 2000). Along the same lines, various scholars have suggested the importance, for both men and women, of their autonomy for their own abilities as well as their perception of entrepreneurial opportunities (Brush et al., 2017). Nonetheless, those perceptions depend on the gender of the entrepreneur because a society's culture, attitudes, values, and social conventions may encourage or discourage certain behaviours, including female entrepreneurship (Arenius and Minniti, 2005; Centindaman et al., 2012; Digan et al., 2019; Langowitz and Minniti, 2007). Accordingly, the following hypotheses are proposed:

Hypothesis 2a: Greater autonomy is positively related to the probability of becoming an entrepreneur.
Hypothesis 2b: Greater autonomy has a larger positive effect on the probability of men than the probability of women becoming entrepreneurs.

Embedded in Williamson's (2000) ideas, transaction costs might be reduced by the existence of networks, in which individuals share values, customs, and knowledge. The existing literature on entrepreneurship has demonstrated the importance of social and collaborative networks as relevant institutional factors when making the final decision to create a business, especially for the female collective (Jayawarna et al., 2015). Subsequently, this factor can help a female entrepreneur's business to survive and succeed (Greve and Salaff, 2003). Although the ways in which men and women create networks are quite similar, the kinds of networks that they create differ considerably (Brush et al., 2019; Neumeyer et al., 2019). For example, women and men benefit in different ways from family networks. Prior research has shown that women use their contacts to obtain more personal or operational support rather than strategic support (Noguera et al., 2013; Sorenson et al., 2008). Other types of networks have also turned out to be beneficial for women and men in different ways. For instance, J.H. Lee et al. (2011) and Lerner et al. (1997) demonstrated that social structures, such as network affiliation (contacts and membership of organisations such as churches, supportive groups, clubs, etc.), motivation, human capital, and environmental factors, explain variations between South Korean and Israeli female entrepreneurs and their male counterparts with relative economic parity: the differential effects of network affiliation are significantly more important for women than for men. However, this research also proved that commitment to a single organisation (e.g., a church) is better than a loose alignment with many support groups. Along the same lines, recent studies have established that people who are members of associations and socialise with other entrepreneurs are more likely to create a business (Busch, 2014; Dufays and Huybrechts, 2014). Being around and becoming acquainted with other businesspeople or role models have a positive impact on starting a new business, more so in the case of women (BarNir et al., 2011; Brush et al., 2019; Langowitz and Minniti, 2007). Consequently, we posit the following hypotheses:

Hypothesis 3a: Being a member of a network has a positive effect on the probability of becoming an entrepreneur.
Hypothesis 3b: Being a member of a network has a more positive effect on the probability of women becoming entrepreneurs than on that of men.

Drawing on Williamson (2000), Audretsch and Moog (2020) suggested that entrepreneurship in the emerging economies of central and eastern Europe is not only an intended outcome of the transition from socialism to capitalism but also a key factor in ensuring the success of the transition and that it encourages economic development, stimulated by transitioning institutional policies that favour private enterprises. Thus, the relevance of entrepreneurship is reflected in both directions (Ireland et al., 2008; Rosca et al., 2020). Along the same lines, social changes and the emerging democratisation of some East Asian countries, such as Taiwan and South Korea, have affected entrepreneurship and economic growth. Taiwan, for example, was formerly ruled by an authoritarian political system with extremely effective governmental control; with the introduction of a democratic process, the political environment has changed and entrepreneurship must be encouraged (Liu, 1998). Likewise, research has investigated how the regional institutional context affects the entry of new firms in Russia. The findings indicate that higher levels of democracy increase the entry rates of small firms but reduce the entry rates for medium or large businesses (Bruno et al., 2013; Goel, 2018). Furthermore, in recent years, different aspects of democracy have been studied, including the way in which, within a representative democracy, the number of representatives affects entrepreneurship. For example, Auriol and Gary-Bobo (2012), taking a sample of one hundred countries, demonstrated the positive correlation between an excess number of representatives in a democracy and indicators of red tape and barriers to entrepreneurship. Similarly, when men and women consider establishing and developing an entrepreneurial business in countries with an unstable political situation, female entrepreneurs tend to perceive barriers to entrepreneurship much more negatively than their male counterparts (Bobera et al., 2014; Centindamar et al., 2012; Chitsike, 2000). To summarise, we propose the following hypotheses:

Hypothesis 4a: A higher level of democracy in each country has a positive effect on the probability of becoming an entrepreneur.
Hypothesis 4b: A higher level of democracy increases the probability of women becoming entrepreneurs more than that of men.

In recent years, some of the research relating to developing countries has focused on how democracy and individual rights are associated with entrepreneurship and how they affect economic development (Audretsch and Moog, 2020). Czegledi (2010) suggested that, when a person believes it is possible to achieve property rights by respecting individual or human rights, this becomes an important factor in entrepreneurship. For instance, it has been found that some human rights, such as health (Pollack et al., 2015; Toivanen et al., 2015), equality (Hechavarría et al., 2017), freedom (Boudreaux, 2014), labour market participation (Styhre, 2014), and education (do Paço et al., 2015; Hafer and Jones, 2015), amongst others, encourage entrepreneurial activity. Thus, access barriers to these rights could deter the entrepreneurship dynamics.

The literature has emphasised education as a fundamental and egalitarian human right. For example, limited access to education in Zimbabwe has been shown to be a barrier to entrepreneurship amongst rural women, promoting inequalities between women and men. In this case, culture is seen as a barrier to self-confidence and economic autonomy amongst women (Chitsike, 2000). The relationship between education and entrepreneurship is one of the factors that is relevant to female entrepreneurship and, over the years, it has been investigated by various authors. Some authors have suggested that education emphasises management skills, allowing female entrepreneurs to evaluate entrepreneurial opportunities more effectively (Castagnetti and Rosti, 2011; Chitsike, 2000; Tlaiss, 2019). Other studies have asserted the opposite. Higher levels of education may also offer better-paid employment opportunities and better working conditions, making it less probable that entrepreneurship will be the most desirable option (Castagnetti and Rosti, 2011; Morales and Holtschlag, 2013). However, the most important point is to have the opportunity to access education because education is one of a number of structural barriers, including the lack of marketable skills, the time and ability to travel, and family providers, which aggravate the problem of entrepreneurship amongst women in developing countries (Chitsike, 2000). Studies conducted in other emerging economies, such as Turkey, Bangladesh, Ethiopia, Indonesia, and Sri Lanka, have shown that entrepreneurial activity amongst women is also correlated with their level of education and the educational level attained by their husbands (Özlem, 2014; Rijkers and Costa, 2012). Accordingly, the following hypotheses are proposed:

Hypothesis 5a: Greater respect for individual human rights has a positive effect on the probability of becoming an entrepreneur.
Hypothesis 5b: Greater respect for individual human rights increases the probability of women becoming entrepreneurs more than that of men.

2.2. *Entrepreneurial activity and social mobility*

Since Schumpeter (1934), scholars of entrepreneurship have asked questions about the effects of entrepreneurial activity (Urbano et al., 2019). Acs et al. (2012) and Minniti and Lévesque (2010), amongst others, have suggested that, across countries, some types of entrepreneurship affect economic development more than others. For example, Reynolds et al. (2005) proposed that entrepreneurship is the net result of individual decisions to create entrepreneurial initiatives leading to social welfare. Sutter et al. (2019) explored the existing literature on entrepreneurship as a solution to poverty, especially in the developing world. They suggested that entrepreneurship plays a key role in including people in the labour market. However, the mechanisms through which these social benefits are obtained remain at the centre of the discussion. At the country level, it is clear that more employment, innovation, productivity, and competitiveness are obtained through entrepreneurship (van Praag and Verslot, 2007). At the individual level, the results are not as conclusive. Some scholars have started exploring well-being (Amorós et al., 2021; Bjørnskov and Foss, 2020) and happiness (Naudé et al., 2014; Zhao et al., 2020) as mechanisms through which individuals affect themselves by becoming entrepreneurs. Nonetheless, this approach remains individual centred, impeding the observation of how entrepreneurs affect other individuals. As a solution, Lora and Castellani (2013) and Mejía and Meléndez (2014) explored social mobility as an alternative mechanism to achieve development at the individual level. Although social mobility has been defined and measured in different ways (e.g., education and intergenerational improvements), Friedman (1962, pp. 170–171) discussed a dynamic society observed through families' capacity to scale up their income level in comparison with a static society characterised by lower mobility. Drawing on this idea, there have been attempts to understand the role of entrepreneurship in social mobility by improving household income (Banerjee and Duflo, 2008; Behrman et al., 1999) and intergenerational mobility (Boudreaux, 2014).

However, the question about the role of both male and female entrepreneurs in social mobility, as well as their interplay, remains unanswered (Mejía and Meléndez, 2014; Pathak and Muralidharan, 2018). This question is related to the capacity to perceive opportunities to create new firms and, at the same time, to spark benefits for society (Acs et al., 2012; Aparicio et al., 2021; Rosca et al., 2020). Indeed, Acs et al. (2013) and Audretsch and Keilbach (2008) suggested that entrepreneurship could be a vehicle for transferring social capacity to social value. Here, institutions are the external environment that encourages or discourages the decision to become an entrepreneur. As noted earlier,

the influence of institutions on male and female entrepreneurs differs widely (Noguera et al., 2013).

There are institutions that devote extensive resources to tracking the progress of nations towards the elimination of gender inequality. Some organisations promote entrepreneurial programmes for women to provide incomes in developing countries. These include the CARE Bangladesh Rural Sales Program and the Coca-Cola women's entrepreneurship commitment in Africa. Studies such as that by Scott et al. (2012) have shown the success that the multinational firm Avon has achieved in this respect. They have used entrepreneurship to help impoverished women to earn a better income and to strive for empowerment. Some research has highlighted the need to develop women's capacity for autonomy and decision making to encourage entrepreneurship amongst them, such as in the case of Botswana. The aim is to combat unemployment and impoverishment, which have worsened in the absence of a national unemployment benefit scheme (Werbner, 2010). Along the same lines, other studies have focused on some areas of South India where an increasing interest in strategies for women's micro-enterprise development has been shown to improve women's incomes and economic status. However, the findings also show that, in these programmes, while women were listed amongst registered resellers in the Indian silk industry, men still controlled the businesses. The results demonstrate the existence of gender inequality in this context and indicate that this problem is systemic and structural in nature (Mayoux, 1993). Similarly, Scott et al. (2012) showed in their study that the case of Avon in South Africa is an example of an entrepreneurial project that, in the context of income, allows female entrepreneurs to rank in the top half of wage-earning black women and allows them to have competitive earnings that are closer to those of black men in South Africa. Other recent studies have described the relationship between entrepreneurial activity and household income as a positive option when low household incomes threaten social mobility in some countries. However, they have also shown that gendered childcare responsibilities create differences between women and men, with the balance clearly not being in favour of women (Jayawarna et al., 2014). Therefore, we posit the following hypotheses:

Hypothesis 6a: Entrepreneurial activity is positively associated with social mobility.

Hypothesis 6b: Male entrepreneurs have a greater impact on social mobility than their female counterparts.

3. Methods

3.1. Data

To assess our hypotheses, we used several questions from the WVS, a global network of social scientists focused on the study of changing values. The WVS has carried out surveys in 97 countries, representing about 90% of the world's population (cf. Inglehart, 2004). Six waves of the WVS have been published (1981–1984; 1989–1993; 1994–1999; 1999–2004; 2005–2009; and 2010–2014), enquiring into individuals' basic values and attitudes across a broad range of issues, including politics and economics, family and religious values, gender issues, and environmental awareness.

This database has been widely used by researchers, for example to analyse economic and political change (Inglehart, 1997); trust in large organisations; trust and well-being across nations (Inglehart, 2000); post-materialism (Inglehart and Abramson, 1999); and values and cultural change (Inglehart and Baker, 2000). Specifically, we used data from the 2011–2014 wave, based on 85,070 respondents from 59 countries across five continents. The final sample size in this paper is smaller (38 developing countries and 40,970 individuals) because we eliminated developed countries and some missing values.

3.2. Variables

3.2.1. Dependant variables

The measurement of entrepreneurship has taken different approaches. For example, Reynolds et al. (2005) provided a framework that helps scholars to measure entrepreneurial activity and its process at the individual level. A parallel approach consists of observing labour market decisions, such as whether to be an employee or self-employed (Parker et al., 2012). Although this measure does not take into account firm characteristics (i.e., size, sector, etc.), it captures how individuals lead (entrepreneurial) initiatives to generate their own income. In this sense, we considered self-employment as a dummy variable that takes the value 1 if the individual is self-employed and 0 otherwise. Additionally, we identified individuals as women or men, using independent dummy variables equal to 1 if the individual is either a self-employed woman or a self-employed man, respectively, and 0 otherwise.

As our final outcome is social mobility, we considered the household income of the respondents. Particularly, our measure shows, for each 10% (decile) of households, the proportion of overall income or wealth. Hence, this measure ranges from 1 to 10. This is consistent with the previous literature, in which household income across time has been considered as a proxy for social mobility (Lora and Castellani, 2013; Mejía and Meléndez, 2014). These dependant variables were taken from the WVS, following López-Calva and Ortiz-Juarez (2014) and Markussen et al. (2018).

3.2.2. Independent variables

The five institutional variables also come from the WVS. In the case of post-materialism, we utilised a standard index built by Inglehart (1997). Consistent with Stephan and Uhlaner (2010) and Uhlaner and Thurik (2007), a post-materialist index ranging from 0 to 5 was adopted. Autonomy was measured through a dummy variable, which indicates whether the respondent sees her-/himself as an autonomous individual. This variable is characterised by the preference for leading projects within a community (Urbano et al., 2021). Being a member of a network is captured by a dummy variable that takes the value 1 if the individual belongs to groups such as church, sport, art, music, labour union, political party, environmental, professional association, humanitarian, consumer, self-help, or other groups and 0 otherwise. In this way, we covered the existence of different associations that increase entrepreneurial alertness (Aidis et al., 2007). Both democracy and respect for human rights follow a recent research line, in which the social structure and human rights laws create a stable environment for entrepreneurship (Audretsch and Moog, 2020; van Gelderen et al., 2021). In the case of democracy, individuals state (using a 10-point scale) how democratically the country is being governed today, while respect for human rights is captured by a dummy variable that takes the value 1 if the respondent considers that there is a great deal or a fair amount of respect for individuals and 0 otherwise.

3.2.3. Controls

As both self-employment (and its distinction between women and men) and social mobility are also affected by unobservable characteristics, some control variables at the individual and country levels were included. For instance, Parker et al. (2012) suggested that the decision to be self-employed is conditioned by age. Accordingly, there is an inverted U-shape between these two variables (Puente et al., 2019). Hence, the concavity is captured by the squared value of respondents' age. Despite our focus on comparing entrepreneurial activity between women and men, some models were employed jointly. In this regard, gender (equal to 1 if male; 0 otherwise) was introduced as a control due to differences across these two population groups (Noguera et al., 2013). Savings are an important support to scale up businesses (Parker et al., 2012), so we used a dummy variable that takes the value 1 if the respondent reported family savings during the past year and 0 otherwise. Human capital

complements this support as it is expected that greater knowledge increases opportunity recognition (Verheul et al., 2005). Thus, education is a dummy variable equal to 1 if the respondent has incomplete secondary school, university, or a higher-level degree and 0 otherwise. As family context matters (Thornton et al., 2011; Vladasel et al., 2020), we included life satisfaction, in response to which respondents stated their satisfaction with their life (10-point scale), as well as the number of children in the family, which captures the household's load. As individual information from previous years is not available due to the data set, the GDP per capita (PPP) lagged one period was included to account for social mobility (Aparicio et al., 2021). In addition, the market size conditions entrepreneurial activity (Reynolds et al., 2005). In this sense, the IMF's number of inhabitants (i.e. the population) was considered as a country-level control, which was complemented by the corruption perception index (Mickiewicz and Rebmann, 2020), taken from Transparency International.

3.3. Empirical approach

Considering that entrepreneurship (the decision to become self-employed) is measured as a dummy variable, we used two-stage probit least squares (2SPLS) (Maddala, 1983), a dummy variable version of two-stage least squares (2SLS), as the estimation strategy. The structural equations are stated below:

$$P(SE_i = 1) = f(I_i, CV_i) \quad (1)$$

$$SM_i = f(\widehat{SE_i}, x_i) \quad (2)$$

where SE_i corresponds to self-employment (women and men jointly and distinguishing between them), I_i represents institutions, and CV_i are the control variables for Eq. (1). Regarding Eq. (2), SM_i is social mobility, SE_i self-employment, and x_i the control variables for this equation. All these variables are for each individual *i*.

The estimation followed a two-stage process with an additional step of standard error correction to avoid heteroscedastic results. Eq. (1) was estimated with probit and Eq. (2) via OLS, and the predicted values ($\widehat{SE_i}$ and $\widehat{SM_i}$) from each model were obtained for use in the second stage. In the second stage, the original endogenous variable in Eq. (1) was replaced by $\widehat{SE_i}$. The final step in this procedure is the correction of standard errors. Using the cdsimeq command developed by Keshk (2003) in Stata, all these estimations were executed automatically. A list of countries can be found in Appendix 1.

4. Results

4.1. Main findings

Table 1 presents the mean, standard deviation, and correlation matrix for the variables of the econometric model presented previously. The table shows that, in our sample, the average rate of self-employment is 15.9% across the developing countries. As expected, the level of male self-employment is higher than that of female self-employment (9.9% and 6.0%, respectively). In terms of social mobility, approached through the income level, on average, individuals across countries are located in the middle of the deciles (4.91).

Additionally, the correlation analysis shows several significant correlations that met our expectations. To test for the problem of multicollinearity, we calculated the VIF values for each individual predictor and found that they were low (below 1.02). Furthermore, to address the possibility of heteroscedasticity and autocorrelation amongst observations pertaining to the same country, corrected standard errors were estimated (Keshk, 2003). The 3SLS and 2SPLS regression analyses are presented in Table 2, in which we report the estimated coefficients, the marginal effects (probit models), and corrected standard errors in parentheses for all the models. We included time fixed effects since the wave uses data across several years. By including these dummies, we tried to control the different economic conditions during the period

Table 1
Descriptive statistics and correlation matrix.

	Variable	Obs.	Mean	Std. Dev.	Min	Max	1	2	3	4	5	6
1	Self-employment	40,970	0.159	0.365	0.000	1.000	1					
2	Female self-employment	40,970	0.060	0.238	0.000	1.000	0.581*	1				
3	Male self-employment	40,970	0.099	0.298	0.000	1.000	0.761*	-0.083*	1			
4	Social mobility	40,970	4.905	2.118	1.000	10.000	-0.017*	-0.011*	-0.013*	1		
5	Post-materialism	40,970	1.854	1.146	0.000	5.000	0.018*	0.016*	0.009*	0.051*	1	
6	Autonomy	40,970	0.709	0.454	0.000	1.000	0.034*	0.014*	0.030*	0.062*	0.037*	1
7	Member of a network	40,970	0.395	0.489	0.000	1.000	0.099*	0.092*	0.048*	0.038*	0.131*	0.005
8	Democracy	40,970	5.999	2.607	1.000	10.000	0.035*	0.043*	0.008*	0.112*	0.02*	0.058*
9	Respect for human rights	40,970	0.559	0.497	0.000	1.000	0.046*	0.045*	0.020*	0.075*	-0.012*	0.031*
10	Age	40,970	38.669	15.135	16.000	99.000	0.035*	0.012*	0.033*	-0.105*	-0.062*	-0.009*
11	Gender	40,970	0.484	0.500	0.000	1.000	0.119*	-0.244*	0.341*	0.020*	0.014*	0.039*
12	Savings	40,970	0.263	0.440	0.000	1.000	0.026*	0.017*	0.018*	0.266*	0.036*	0.041*
13	Education	40,970	0.390	0.488	0.000	1.000	-0.111*	-0.073*	-0.077*	0.196*	0.048*	0.030*
14	Life satisfaction	40,970	6.821	2.369	1.000	10.000	-0.004	0	-0.005	0.226*	0.069*	0.046*
15	No. of children	40,970	1.872	1.890	0.000	8.000	0.081*	0.068*	0.044*	-0.113*	-0.049*	0.014*
16	GDP pc_{t-1}	40,970	12,607.810	8075.007	875.849	42,220.440	-0.147*	-0.106*	-0.096*	0.018*	0.000	0.000
17	Population	40,970	122.016	303.807	1.333	1354.040	-0.037*	-0.049*	-0.006	-0.067*	-0.001	0.021*
18	Corruption perception index	40,970	35.916	11.960	18.000	72.100	0.011*	0.034*	-0.013*	0.012*	0.064*	0.104*
	Variable	7	8	9	10	11	12	13	14	15	16	17
7	Member of a network	1										
8	Democracy	0.090*	1									
9	Respect for human rights	0.059*	0.320*	1								
10	Age	-0.061*	-0.009*	-0.031*	1							
11	Gender	0.039*	-0.007	0.009*	-0.002	1						
12	Savings	0.091*	0.046*	0.062*	-0.082*	0.040*	1					
13	Education	0.015*	-0.025*	-0.025*	-0.147*	0.029*	0.102*	1				
14	Life satisfaction	0.066*	0.204*	0.075*	-0.030*	-0.003	0.112*	0.087*	1			
15	No. of children	-0.014*	0.018*	0.006	0.518*	-0.069*	-0.090*	-0.210*	-0.00*	1		
16	GDP pc_{t-1}	-0.174*	0.027*	-0.078*	0.154*	-0.009*	-0.013*	0.146*	0.111*	-0.041*	1	
17	Population	-0.002	-0.008*	0.086*	0.053*	0.043*	0.068*	-0.051*	-0.058*	-0.037*	-0.108*	1
18	Corruption perception index	0.086*	0.217*	0.120*	0.058*	0.031*	0.016*	-0.012*	0.062*	-0.029*	0.316*	0.046*

* $p < 0.10$. Notes. Obs. Observations; Std. Dev. Standard Deviation.

Table 2
Results of simultaneous equation model.

	(1) 3SLS	(2)	(3)	(4) 2SPLS		(5)		(6)	
	Self-employment Estimation	Female Self-employment Estimation	Male Self-employment Estimation	Self-employment Estimation	dy/dx	Female Self-employment Estimation	dy/dx	Male Self-employment Estimation	dy/dx
Post-Materialism	0.005***	0.004***	0.003**	0.020**	0.004**	0.026**	0.003**	0.011	0.002
	(0.002)	(0.001)	(0.001)	(0.011)	(0.002)	(0.009)	(0.001)	(0.012)	(0.001)
Autonomy	0.022***	0.010***	0.021***	0.099***	0.021***	0.059***	0.006***	0.112***	0.018***
	(0.004)	(0.002)	(0.003)	(0.018)	(0.004)	(0.024)	(0.002)	(0.020)	(0.003)
Member of a network	0.034***	0.021***	0.013***	0.169***	0.038***	0.230***	0.024***	0.085***	0.014***
	(0.004)	(0.002)	(0.003)	(0.017)	(0.004)	(0.022)	(0.003)	(0.019)	(0.003)
Democratic country	0.005***	0.004***	0.002***	0.017***	0.004***	0.027***	0.003***	0.003	0.000
	(0.001)	(0.000)	(0.001)	(0.003)	(0.001)	(0.005)	(0.001)	(0.004)	(0.003)
Respect for Human Rights	0.019***	0.014***	0.009***	0.066***	0.015***	0.085***	0.008***	0.029	0.005
	(0.004)	(0.002)	(0.003)	(0.017)	(0.004)	(0.023)	(0.002)	(0.019)	(0.003)
Age	0.017***	0.007***	0.010***	0.087***	0.019***	0.076***	0.008***	0.065***	0.011***
	(0.001)	(0.000)	(0.001)	(0.003)	(0.001)	(0.004)	(0.001)	(0.003)	(0.001)
Age^2	-0.000***	-0.000***	-0.000***	-0.001***	-0.000***	-0.001***	-0.000***	-0.001***	-0.000***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Gender	0.087***			0.411***	0.091***				
	(0.003)			(0.016)	(0.004)				
Social mobility	-0.007	-0.005	-0.001	-0.031**		-0.039**		-0.001	
	(0.002)	(0.002)	(0.002)	(0.011)		(0.014)		(0.012)	
GDP pc_{t-1}	-0.000***	-0.000***	-0.000***	-0.000***	-0.000***	-0.000***	-0.000***	-0.000***	-0.000***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
GDP pc^2_{t-1}	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Population	-0.000***	-0.000***	-0.000***	-0.000***	-0.000***	-0.001***	-0.000***	-0.000***	-0.000***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Constant	-0.172***	-0.056***	-0.073***	-2.647***		-2.822***		-2.476***	
	(0.014)	(0.009)	(0.012)	(0.084)		(0.115)		(0.092)	
(Pseudo) R^2	0.066	0.030	0.021	0.085		0.077		0.036	
Probability				0.137		0.048		0.091	
Log likelihood				-16,404.076		-8592.0526		-12,722.539	
LR X^2				3048.12		1429.02		954.13	
	Social Mobility	Social Mobility	Social Mobility	Social Mobility		Social Mobility		Social Mobility	
Self-employment	0.912***			0.191***					
	(0.116)			(0.025)					
Female self-employment		3.169***				0.339***			
		(0.265)				(0.032)			
Male self-employment			1.231***					0.176***	
			(0.255)					(0.041)	
Savings	1.127***	1.114***	1.131***	1.104***		1.092***		1.114***	
	(0.023)	(0.023)	(0.023)	(0.023)		(0.024)		(0.023)	
Education	0.622***	0.636***	0.627***	0.684***		0.711***		0.668***	
	(0.022)	(0.022)	(0.023)	(0.022)		(0.024)		(0.023)	
Life satisfaction	0.174***	0.173***	0.174***	0.173***		0.174***		0.173***	
	(0.004)	(0.004)	(0.004)	(0.004)		(0.005)		(0.004)	
No. of children	-0.073***	-0.078***	-0.073***	-0.074***		-0.087***		-0.069***	
	(0.006)	(0.006)	(0.005)	(0.006)		(0.006)		(0.006)	
Corruption perception index	0.007***	0.006***	0.006***	0.005***		0.004***		0.006***	
	(0.001)	(0.001)	(0.001)	(0.001)		(0.001)		(0.001)	
Constant	2.986***	2.998***	3.014***	3.401***		3.999***		3.356***	
	(0.054)	(0.054)	(0.059)	(0.064)		(0.099)		(0.075)	
Country fixed-effects	Yes	Yes	Yes	Yes		Yes		Yes	
Time fixed-effects	Yes	Yes	Yes	Yes		Yes		Yes	
Observations	40,970	40,970	40,970	40,970		40,970		40,970	
R^2	0.134	0.075	0.126	0.152		0.154		0.151	

* $p < 0.10$; ** $p < 0.05$; *** $p < 0.01$.
Note. Models 1–3 are estimated through 3SLS, while models 4–6 are estimated using 2SPLS, which have corrected standard errors (in parentheses). Estimates for country and time fixed-effects are not presented but can be supplied upon request.

2011–2014. All the models are highly significant ($p \leq 0.000$). Model 1 presents the regression results for institutional factors and gender entrepreneurship (Eq. (1)) and the link between these and social mobility (Eq. (2)) using simultaneous linear regression models (three--stage least squares – 3SLS) in both equations. Model 2 shows the results for female self-employment, and, for comparison purposes, Model 3 presents the results for male self-employment; both models were estimated through 3SLS. By comparison, Model 4 (self-employment and social mobility), Model 5 (female self-employment and social mobility), and Model 6 (male self-employment and social mobility) were estimated through 2SPLS. Finally, following Arenius and Minniti (2005) and Langowitz and Minniti (2007), we included control variables related to socio-demographic factors in all the models (gender, age, age squared, GDP per capita, and population for Eq. (1) and savings, education, life

satisfaction, number of children in the household, and corruption perception index for Eq. (2)), estimated to analyse the probability of becoming self-employed and its effect on social mobility. It is important to mention that the gender variable was dropped in Models 2, 3, 5, and 6, thus avoiding collinearity problems in these models. Additionally, country and time fixed effects were included.

Concerning the hypothesis testing, the first set of hypotheses posited that post-materialism has a positive effect on the probability of becoming an entrepreneur. We found support for Hypothesis 1a (due to the marginal effect of this variable), which is positive and significant in Model 4 ($p < 0.05$). This result is consistent with evidence that a higher level of post-materialism can be related to a higher level of entrepreneurial activity (Hechavarría et al., 2017; Morales and Holtschlag, 2013; Uhlaner and Thurik, 2007). Furthermore, as we expected, our results suggest that post-materialism has a more positive influence on female entrepreneurs than on their male counterparts (see Model 5, $p \leq 0.05$). Hence, a self-employed woman is positively affected by post-materialism, as we expected and according to previous studies (Smallbone and Welter, 2011; Welter and Smallbone, 2008). This effect is statistically significant (see Model 2), although the coefficient is not significant for Model 6. Note that these findings are in accordance with Hypothesis 1b. These results could be explained by the fact that women are more affected by the non-materialistic values of their environment than men as they tend to be more driven by cultural values. Therefore, for women, the decision to start a new business may be highly dependant on their family and societal values.

Regarding the second set of hypotheses, which refers to greater individual autonomy as the positive factor that is related to entrepreneurial activity, the coefficients of this variable in Models 4, 5, and 6 are statistically significant. Thus, Hypothesis 2a and Hypothesis 2b are also supported by the results and are in accordance with the literature. The magnitude of the coefficients shows the positive influence of autonomy on self-employment (Manimoy and Smith-Hunter, 2012 Shinnar et al., 2012) for both female and male entrepreneurs. However, a small difference exists in favour of male self-employment, which is higher than female self-employment. In line with the literature, the results indicate that a higher level of autonomy is more embedded in male entrepreneurs than in female ones. Here, the marginal difference suggests that autonomy is important for both men and women to becoming self-employed.

Hypotheses 3a and 3b, regarding membership of a network, are also supported by our data. Here, the literature has suggested that networks are an important factor determining the occupational choice to be self-employed (Busch, 2014; Dufays and Huybrechts, 2014; J.H. Lee et al., 2011). Despite that, in general, both men and women constantly interact with people from different groups. The literature has asserted that women take advantage of their networks for supportive purposes, while men use them for strategy reasons (Noguera et al., 2013; Sorenson et al., 2008). Thus, the support that female entrepreneurs experience from their groups is more relevant for those who are self-employed than it is for their male counterparts. Our findings for developing countries allow a similar conclusion. Individuals in these countries are mainly encouraged by religious groups (Audretsch et al., 2013), which, in most cases, have neither rivalry nor exclusion issues.

Regarding the hypotheses about the level of democracy and its influence on self-employment, Model 4 supports this idea ($p < 0.01$). Our results suggest that, when a country allows political and economic participation through voting, in general, individuals will be encouraged to engage in entrepreneurial activities and private activities (Ireland et al., 2008). Both high levels of democracy and control over corruption guarantee the removal of entry barriers and an increased amount of entrepreneurial activity (Aparicio et al., 2016). In this regard, egalitarian participation in political and economic decisions by women and men is especially helpful in generating incentives to engage in entrepreneurship. Here, the results support Hypothesis 4b. Our Models 5 and 6 show that democracy is statistically significant in the case of female self-employment but not in the case of male self-employment. These findings are in line with those of Bobera et al. (2014), Centindamar et al. (2012), and Chitsike (2000), who suggested that unstable political situations are perceived more negatively by female entrepreneurs than male entrepreneurs.

In the case of Hypotheses 5a and 5b, we found support through our estimation results. Our findings suggest that greater respect for human rights is positively related to becoming an entrepreneur (Model 4, $p < 0.01$). According to Czegledi (2010), a realistic appreciation of property rights as well as human rights is useful for reducing the uncertainty that entrepreneurs face every day. Here, the emphasis on entrepreneurship could reduce threats from violence and urban theft. Additionally, human rights guarantee equality between women and men by providing them with access to the same conditions, such as education, as well as the labour market. In this regard, Castagnetti and Rosti (2011) and Morales and Holtschlag (2013) found that the entry barriers to these systems are also harmful for entrepreneurs, especially for female ones. Here, our Models 5 and 6 suggest (highly significantly) that human rights are one of those institutional factors affecting female more than male self-employment. Thus, by strictly establishing human rights, female entrepreneurship could be strongly encouraged.

Hypothesis 6a, which states that entrepreneurial activity contributes positively to social mobility, is supported by our data. From Models 4 to 6, it was found that, in general and distinguishing between genders, the decision to become an entrepreneur increases upward mobility for people from low-income backgrounds, implying a higher standard of living ($b = 0.147, p < 0.01$; $b = 0.265, p < 0.01$; and $b = 0.161, p < 0.01$, respectively). Since Schumpeter (1934), the relevance of entrepreneurial activity to economic development has been highlighted. In this respect, our findings are in accordance with recent work that has identified the importance of entrepreneurship in creating social value (Acs et al., 2013). At both theoretical and policy levels of analysis, entrepreneurship could be considered as an endogenous factor affecting national income (Urbano and Aparicio, 2016), which should be taken into account in government strategies in developing countries that aim to solve problems such as poverty and the unofficial economy (Acs et al., 2012; Bruton et al., 2013). Here, Acs et al. (2012) and Audretsch and Keilback (2008) found that some macroeconomic factors, such as industrial and demographic characteristics, affect the level and quality of entrepreneurial activity related to the achievement of development. In this regard, Urbano and Aparicio (2016) suggested that public policy should be formulated from institutional factors (rules, laws, values, and education, amongst others) to increase the motivation to become an entrepreneur and thus obtain growth and development.

Finally, Hypothesis 6b, which suggested that male entrepreneurs have a greater impact on social mobility than their female counterparts, is not supported by our data. The literature has presented a lengthy debate concerning the importance of women and men in economic development. For instance, Cliff (1998) argued that female entrepreneurs tend to define a smaller threshold growth size than their male counterparts, mainly because women are more risk averse than men. Following this author, it is expected that female entrepreneurship contributes less in terms of job creation, growth, and economic development than male entrepreneurship. In this respect, Carter et al. (1997) found that obtaining the initial funding resources and the strategies for overcoming this problem have been less effective for women than for men. Lerner et al. (1997) explored those factors affecting female entrepreneurship performance in developing countries, specifically in Israel. According to these authors, the larger and more complex is the network, the stronger is the firm performance of female entrepreneurs relative to their male counterparts. According to Lerner et al. (1997), women's higher educational level relative to that of men and motivations such as achievement, independence, and economic necessity are some of the drivers shaping the firm performance of female entrepreneurs, implying firm growth, job creation, and economic welfare for them, their families, and society. Similarly, Lerner and Almor (2002) found a high correlation

between lifestyle and marketing, financial, and managerial skills, all of which were exploited through women's networks. These elements have contributed to dynamic business performance, employment generation, and gender equality in terms of income level. Based on all of these previous studies, policy discussions about addressing the glass ceiling have taken into account educational characteristics and their quality, which is higher for women than for men, to promote the business performance, survival, and economic impact of female entrepreneurs. For example, Rodríguez Gutiérrez et al. (2014) discussed the importance of education in increased entrepreneurial orientation and, therefore, market and learning orientation, which are important in improving performance, thus differentiating female entrepreneurs from their male counterparts. Mitchelmore and Rowley (2013) found that not only the threshold size but also the planning horizons are important expectations that should be encouraged amongst female entrepreneurs to increase their performance and economic impact. Mathew (2010) suggested that information and communication technologies (ICTs) enable female entrepreneurs to achieve equal participation with men in economic growth and development in emerging economies. According to this author, the reduction of information asymmetries allows female entrepreneurs to participate in global business dynamics, technology transfer, training, collaboration, and development initiatives.

4.2. Robustness checks

To check whether our results are robust, we performed four robustness checks. First, to determine whether Eq. (1) and Eq. (2) are in fact endogenous, we compared the relationship between these two equations through the probit and OLS models by using a Durbin–Wu–Hausman (DWH) F-test (Hausman, 1978) for endogeneity. According to Davidson and MacKinnon (1993), an augmented regression test (DWH test) can easily be performed by including the residuals of each endogenous right-hand-side variable in a regression of the original model as a function of all the exogenous variables. Here, the null hypothesis proposed is that the maximum likelihood and OLS estimates are consistent, which means that the treatment statuses are exogenous. The DWH test rejects the null hypothesis that self-employment and social mobility are exogenous at the 1% significance level (F-test = 30.55). This indicates that considering issues of simultaneity could also bring additional insights into current studies on the entrepreneurship of both women and men and on social mobility. In addition, according to Alvarez and Glasgow (1999), the application of probit or OLS assuming exogeneity will most likely result in biased estimates and incorrect inferences. Hence, the authors concluded that the estimates obtained in the simultaneous equation treatment, and particularly in the estimation of the second stage, are consistent.

Second, comparing the two types of simultaneous models (3SLS vs. 2SPLS), it is worth noting that the coefficients and standard errors remain relatively stable across the two methods displayed in Table 2. The simultaneity problem, which was so important with respect to both female and male self-employment and social mobility variables, does not appear to influence the remainder of the model. For this reason, we restricted our description of the institutional variables in the previous section to the two-stage probit model displayed in Table 2. It should be noted that, even though our analysis was carried out using Models 4 to 6, the results of Models 1 to 3 are in agreement. However, an appropriate analysis should be conducted using the 2SPLS results as one of the dependant variables is binary. Using alternative methods, such as 3SLS, implies linear regression inference, which is an additional mistake in this case (Alvarez and Glasgow, 1999).

As Acs et al., (2012); Audretsch and Keilbach (2008); Bjørnskov and Foss (2013), and Urbano and Aparicio (2016), amongst others, have recognised, the relationship between entrepreneurship and socio-economic performance should be analysed as though reciprocal causation exists. Thus, employing instrumental variables through a two-stage probit least squares estimation method rather than the classical logit (or probit), OLS, and 3SLS methods enhances both the theoretical discussion and the policy implications. By controlling for the simultaneity problem with the 2SPLS method, our study produced unbiased and consistent estimators that more accurately capture the impact of self-employment.

Third, we were interested in checking whether another employment status follows a similar trend to that shown in the main results. In this case, we take into consideration full-time employment as an alternative labour decision that members of the population can make. As observed in Appendix 2, though the results for Eq. (1) are not similar to those displayed in the main results, we found that gender differences exist when predicting social mobility. In particular, it was apparent that female full-time employees exert a larger and statistically significant influence on social mobility than their male counterparts. Interestingly, we found that the coefficients for female self-employment are higher than those for female full-time employees.

Fourth, to check whether the gender differences are statistically significant, we estimated alternative linear models that include a gender interaction term that affects the relationship between each of the institutional variables and self-employment as well as the influence of this status on social mobility. Despite the statistical insignificance of autonomy, the remaining institutional variables have different effects on self-employment depending on gender differences. A similar level of significance was found when assessing the influence of self-employment on social mobility. These results are not reported but can be provided on request.

The findings from the checks described above show that our results are stable with respect to various changes applied to the original specification. Therefore, we are confident that the female and male entrepreneurship that we studied had a robust positive effect on social mobility. Through these results, the reverse causality problem was solved, allowing a broad comprehension of the interrelationship between these variables. Hence, institutional factors such as post-materialism, autonomy, membership of a network, democracy, and human rights influence both female and male entrepreneurship, which at the same time took account of social mobility in terms of the household income level. Here, both female and male entrepreneurs contribute to social mobility, but the impact of female self-employment remains stronger than that of male self-employment.

5. Discussion and conclusions

In this paper, cross-sectional data (for the period 2011–2014) were used to investigate the institutional influence on the probability of becoming a female entrepreneur and the impact of this decision on social mobility in developing countries. Institutional economics (North, 1990) and its application to entrepreneurship were our departure point. These foundations offered us a conversation, to which we wanted to contribute with insights about entrepreneurship behaviour as an engine of social mobility. Our analysis advances traditional macroeconomic view of institutions (Bruton et al., 2010; Thornton et al., 2011), showing that socialization processes proximate to individuals explain gender differences in entrepreneurship, and most importantly, in accomplishing social mobility. These findings bring some ideas into the theoretical discussion about institutions, entrepreneurship, and development (Urbano et al., 2019). Likewise, our results encourage a conversation around policy strategies to encourage female entrepreneurship to overcome gender inequality and achieve social mobility.

5.1. Theoretical implications

There has been a long debate about the direct effect that institutions have on economic development (Acemoglu et al., 2001, 2002; Gleaser et al., 2004; Wietzke, 2015). In this respect, Voigt (2013) provided an analysis of the measurement of institutions' importance for economic development. This leads to questions concerning the importance of

institutions. On the one hand, institutional analysis should take account of different types of institutions since cultural factors, regulations, and socio-cognitive processes complement each other (Voigt, 2013); on the other hand, institutional settings can or cannot be regressed according to an income function (Gleaser et al., 2004). This means that a conduit is needed to influence socio-economic development.

In a general sense, Audretsch and Keilbach (2008) discussed the importance of entrepreneurship for economic growth, highlighting the capacity to create innovation, competition, and progress. These authors took into account the influence of institutions on entrepreneurship, despite the lack of further analysis in this regard. However, to explain the development differences across countries, other authors, such as Bruton et al., (2010) and Thornton et al., (2011), have produced in-depth analyses of the way in which institutions affect entrepreneurial activity. Baumol and Strom (2007) complemented this idea by suggesting that entrepreneurship is one of the missing links connecting institutions and growth. In this regard, economic development has been approached through (labour) productivity and national or regional production (Bjørskov and Foss, 2013; van Praag and Versloot, 2007). This traditional approach remains at the macroeconomic level, leaving aside other social problems, such as poverty, inequality, violence, and so on, which are particularly observed in developing countries (Aparicio et al., 2021; Bruton et al., 2009).

Perhaps, as Amorós et al., (2021) and Bjørnskov and Foss (2020) suggested, a microeconomic perspective is needed to comprehend further the underlying mechanisms of institutions, entrepreneurship, and development. Felin and Foss (2019) offered a compelling analysis of the micro-foundations of institutions. Although they referred to organisations (i.e., the meso level), our results suggest that individuals carry the institutional perception of the society, making decisions and performing actions. This is consistent with Coleman (1990), who depicted a multilevel structure in which institutions at the macro level create conditions of individual action in the form of information.

The way in which information is perceived alters decision-making processes regarding actions such as entrepreneurship. This is especially true when it comes to issues such as the gender gap (Al-Dajani and Carter, 2010 Hechavarría et al., 2018). Particular efforts have been made to understand the proximate (or individual) context of women and men to design an appropriate environment in which information flows smoothly (Aidis et al., 2007; Brush et al., 2019; Elam and Terjesen, 2010). Audretsch and Moog's (2020) recent piece of research pointed the finger at democracy as the social order and structure enabling freedom for individuals and their actions. Our results also add empirical insights into these ideas, especially for women, who are more positively affected than men. It seems that democracy creates the conditions for individual actions, which translate into better individual and social conditions.

Coleman's (1990) analysis shed light on individual decisions as antecedents of macroeconomic outcomes (e.g. growth). Our results, in line with Amorós et al., (2021) and Bjørnskov and Foss (2020), show that an additional element might be needed in the Coleman Bathtub. That is, women's entrepreneurial actions bring not only higher income to the home but also other characteristics that affect everybody within the family. One of the reasons that the marginal effect on social mobility produced by women becoming entrepreneurs is greater than the effect produced by men becoming entrepreneurs lies in the natural role that women have within their families. Although equality implies that both parents look after their children, the natural connection between mothers and their offspring imprints an additional element to the effect on social mobility. While we focus on household income, showing that female entrepreneurs increase the income level about twice as much as male entrepreneurs, complementary literature has shown effects on additional social mobility elements, such as higher educational attainments (Mejía and Meléndez, 2014) and wealth, which become a funding source for future generations (Behrman et al., 1999). Hence, entrepreneurship becomes an engine that brings benefits beyond economic aspects, spilling knowledge, well-being, and financial resources into the proximate environment of women and men.

5.2. Policy implications

From this microeconomic perspective and simultaneous treatment, we found that both male and female entrepreneurs contribute to economic development by allowing social mobility (Patel et al., 2018). In this regard, authors such as Mathew (2010), Mitchelmore and Rowley (2013), and Rosca et al., (2020) have advocated particular policies that encourage to think of entrepreneurship and their economic contribution. Certainly, accurate policies may benefit women through the different stages of the entrepreneurship process (i.e. exploration, evaluation, and exploitation of business ideas). The importance of female entrepreneurs in social welfare has been pointed out, taking into account the fact that emerging economies present high entry barriers to women's labour participation (Jennings and Brush, 2013; Watson, 2012). Although it has been found that female entrepreneurs and their business success contribute to social and economic development, Kantor (2005) suggested that the impact of female entrepreneurs should also be considered in terms of their importance to the home. In this regard, female entrepreneurship could transfer not only market benefits but also benefits for the educational and labour achievements of their offspring, who, in the long term, could perceive those female entrepreneurs as role models for the future. Based on our results, we suggest that it is important to improve the status of women in the home, allowing them to make decisions and take risks and providing support for them in the case of failure. This implies empowering women in terms of resource use and management. In the case of one-parent families, the role of female entrepreneurs is particularly relevant, first, because, in most cases, it is women who have to carry out both activities (childcare and work in the labour market) to survive and, second, because entrepreneurship is an alternative means for them to carry out these two tasks. Hence, L. Lee et al. (2011) and Ratinho et al., (2020) suggested that policies that encourage female entrepreneurship should take into consideration characteristics such as marital status, the presence of children, age, education level, and business type.

Based on our results, the fact that female entrepreneurship is affected by post-materialism implies that these entrepreneurs have an intrinsic characteristic from their past and current family configuration. It means that some educational strategies aimed at improving their entrepreneurial and business skills should consider factors such as leadership style, experience, personality, self-perception, and social and cultural influences, primarily from their past experiences of work and family (Junquera, 2011). According to Acs et al., (2013) and Brush et al., (2019), entrepreneurial ecosystems as well as entrepreneurship policies must be appropriate for the particular problems of the incumbents, small firms, and entrepreneurs of each economy. Here, these authors have argued that entrepreneurs participate in the balance between what exists and what is needed and the bridge to achieve economic development. The issue of poverty and its solution through the use of an entrepreneurial strategy (Bruton et al., 2013) should encourage policy makers to focus their attention on female entrepreneurs, who transcend materialistic values and could be the key to reducing poverty by improving social mobility and helping to strike a balance between social needs and social capacity. The social value created could spread from the family outwards to the entire society.

Henry et al., (2015) and Kantor (2005) emphasised the empowerment and leadership of women in the both home and work contexts. Complementing the previous idea, empowerment should come not only from the family structure but also from the government, which should establish and enforce the capacity for self-respect and respect from others. In this regard, the self-perception of autonomy allows individuals to take decisions by themselves. According to Romani et al., (2012), social policies should be orientated towards encouraging the capacity of female entrepreneurs in terms of creating and exploiting opportunities

based primarily on their needs (including families) and on the markets. Encouraging women's autonomy from their families and society makes it possible to increase their self-esteem, which, in turn, is useful for increasing the range of investors and individuals interested in their social projects.

Achieving autonomy is also a matter of social and political structure (Audretsch and Moog, 2020). According to Robinson et al., (2007), female entrepreneurs create a link between self-employment decisions and social stratification, in which institutions and culture frame the relationship. Here, not only the glass ceiling but also the social status are problems that female entrepreneurs face. According to van Stel et al. (2007), some corrupt governments create additional entry barriers for entrepreneurs. It is predominantly governments with fewer democratic processes that tend to establish procedures in favour of multinational (or large) organisations, thus diminishing the economic activity of small firms and new entrepreneurs (van Stel et al., 2007). Our findings are in keeping with this assertion since a higher level of democracy in each economy and the respect for human rights positively affect both female and male entrepreneurs in developing countries. These two factors have an especially strong influence on female entrepreneurship, highlighting the importance of governments and their policy decisions in encouraging or discouraging the empowerment needed by female entrepreneurs.

Finally, public policies should consider those communities of women who support each other in terms of childcare and shared work: effectively, women empowering women. This kind of network is especially useful since poverty, as well as unemployment issues, remains in developing countries. Strategies should pay attention to those cooperative groups in which female entrepreneurs work together for social purposes. In this sense, governments and incumbent firms could contribute to these types of networks by providing, on the one hand, an aligned financial structure to support the projects carried out by these entrepreneurs and, on the other, a platform that connects their goods and services with the markets. By supporting these entrepreneurial initiatives, it could be possible, through social mobility, to help families that are caught in the poverty trap.

5.3. Limitations and future research

Finally, we believe that a study of the influence of institutional factors, not independently but in terms of their overall effects, would be a very worthwhile endeavour. In this sense, future research should focus on comparing institutional settings between developed and developing countries. This may enhance the perspective of entrepreneurship amongst both women and men and its effects on social mobility as a mechanism for overcoming poverty. Other control variables at the individual and country levels should also be included since heterogeneity between countries exists. Additionally, according to Ahl (2006), research on female entrepreneurship should take a further direction. Specifically, Ahl (2006) referred to a new analysis that avoids underestimating the role of female entrepreneurs in comparison with male entrepreneurs. Instead, new variables affecting female entrepreneurship and its impact on economic welfare should be explored. Here, following the views of North (1990, 2005), institutional factors should be included as a means of ruling out the differences between countries.

Consistent with Welter (2011), it has been suggested that one of the aspects characterising institutions is time. Although we used cross-sectional data from the 2011–2014 wave, future research might be interested in including the time dimension through a pseudo-panel data approach, in which individuals are different but countries are the same over the years. This idea is also consistent with recent analyses about democracy and entrepreneurship (Audretsch and Moog, 2020). Additional research could build upon our results to see whether gender differences and their effect on microeconomic outcomes such as social mobility remain across other groups of countries.

Certainly, the existence of seven waves may impose additional challenges as time variation and changes in political structures occur smoothly. Nevertheless, important insights can be brought into the analysis of institutions, (female) entrepreneurship, and social mobility. Additionally, the different economic impacts of female and male entrepreneurship, such as job creation, community development, innovation, standards of living, and regional performance, amongst others, could extend and provide keys to improving the debate about entrepreneurship and social mobility. The study of these two variables is proposed as a new avenue in terms of entrepreneurship research and economic and management science.

Authorship contributions

All persons who meet authorship criteria are listed as authors, and all authors certify that they have participated sufficiently in the work to take public responsibility for the content, including participation in the concept, design, analysis, writing, or revision of the manuscript. Furthermore, each author certifies that this material or similar material has not been and will not be submitted to or published in any other publication before its appearance in *Technological Forecasting and Social Change*.

Category 1: Conception and design of study: Sebastian Aparicio, David Audretsch, Maria Noguera, David Urbano acquisition of data: Sebastian Aparicio, David Audretsch, Maria Noguera, David Urbano analysis and/or interpretation of data: Sebastian Aparicio, David Audretsch, Maria Noguera, David Urbano

Category 2: Drafting the manuscript: Sebastian Aparicio, David Audretsch, Maria Noguera, David Urbano revising the manuscript critically for important intellectual content: Sebastian Aparicio, David Audretsch, Maria Noguera, David Urbano

Category 3: Approval of the version of the manuscript to be published: Sebastian Aparicio, David Audretsch, Maria Noguera, David Urbano

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Appendix 1. List of countries

	Country	2011	2012	2013	2014		Country	2011	2012	2013	2014
1	Algeria	0	0	684	0	21	Morocco	406	0	0	0
2	Azerbaijan	908	0	0	0	22	Nigeria	1759	0	0	0
3	Armenia	774	0	0	0	23	Pakistan	0	1137	0	0
4	Brazil	0	0	0	1110	24	Peru	0	836	0	0
5	Belarus	406	0	0	0	25	Philippines	0	1164	0	0
6	Chile	621	0	0	0	26	Romania	0	1062	0	0
7	China	0	1293	0	0	27	Russia	1004	0	0	0
8	Taiwan	0	1038	0	0	28	Rwanda	0	1517	0	0
9	Colombia	0	1282	0	0	29	South Africa	0	0	2658	0
10	Ecuador	0	0	1173	0	30	Zimbabwe	0	1493	0	0
11	Ghana	0	1552	0	0	31	Thailand	0	0	924	0
12	India	0	0	0	1130	32	Trinidad and Tobago	336	0	0	0
13	Iraq	0	918	0	0	33	Tunisia	0	0	832	0
14	Kazakhstan	1500	0	0	0	34	Turkey	1250	0	0	0
15	Jordan	0	0	0	1043	35	Ukraine	421	0	0	0
16	Kyrgyzstan	655	0	0	0	36	Egypt	0	0	1523	0
17	Lebanon	0	0	814	0	37	Uruguay	574	0	0	0
18	Libya	0	0	0	1402	38	Yemen	0	0	0	716
19	Malaysia	0	1267	0	0		Total	10,614	16,347	8608	5401
20	Mexico	0	1788	0	0						

Appendix 2. Results for full time employees

	(1) 2SPLS Full time employee Estimation	dy/dx	(2) Female Full-time employee Estimation	dy/dx	(3) Male Full-time employee Estimation	dy/dx
Post-Materialism	-0.019	0.006	-0.006	-0.001	-0.016**	-0.004**
	(0.032)	(0.007)	(0.008)	(0.001)	(0.010)	(0.002)
Autonomy	-0.142**	-0.047**	-0.202**	-0.036***	-0.001	0.000
	(0.053)	(0.018)	(0.020)	(0.004)	(0.017)	(0.004)
Member of a network	0.020	0.007	0.019	0.003	0.036**	0.009**
	(0.052)	(0.017)	(0.019)	(0.003)	(0.017)	(0.004)
Democratic country	-0.013	-0.004	-0.006	0.001	-0.014***	-0.003***
	(0.009)	(0.003)	(0.004)	(0.001)	(0.003)	(0.001)
Respect for Human Rights	-0.038	-0.012	-0.044**	0.007**	-0.013	-0.003
	(0.052)	(0.017)	(0.019)	(0.003)	(0.017)	(0.004)
Age	0.133***	0.043***	0.104***	0.017***	0.093***	0.023***
	(0.009)	(0.003)	(0.004)	(0.001)	(0.003)	(0.001)
Age^2	-0.002***	-0.001***	-0.001***	-0.000***	-0.001***	-0.000***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Gender	0.491***	0.158***				
	(0.048)	(0.016)				
Social mobility	0.250***		0.205***		0.169***	
	(0.032)		(0.012)		(0.010)	
GDP pc_{t-1}	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
GDP pc^2_{t-1}	-0.000***	-0.000***	-0.000***	-0.000***	-0.000***	-0.000***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Population	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Constant	-4.776***		-4.369***		-3.733***	
	(0.239)		(0.105)		(0.086)	
(Pseudo) R^2	0.124		0.074		0.054	
Probability	0.257		0.093		0.161	
Log likelihood	-21,637.636		-13,409.021		-18,133.304	
LR X^2	6130.60		2149		2049.54	
	Social Mobility		Social Mobility		Social Mobility	
Full time employee	0.029					
	(0.022)					
Female full-time employee			0.063**			
			(0.022)			
Male full-time employee					0.015	
					(0.028)	
Savings	1.131***		1.129***		1.134***	
	(0.029)		(0.023)		(0.023)	
Education	0.612***		0.600***		0.621***	
	(0.029)		(0.023)		(0.022)	
Life satisfaction	0.172***		0.171***		0.171***	
	(0.005)		(0.004)		(0.004)	
No. of children	-0.063***		-0.061***		-0.064***	
	(0.007)		(0.005)		(0.005)	
Corruption perception index	0.006***		0.006***		0.006***	

(*continued on next page*)

(*continued*)

	(1) 2SPLS Full time employee		(2) Female Full-time employee		(3) Male Full-time employee	
	Estimation	dy/dx	Estimation	dy/dx	Estimation	dy/dx
	(0.001)		(0.001)		(0.001)	
Constant	3.171***		3.274***		3.149***	
	(0.074)		(0.073)		(0.063)	
Country fixed-effects	Yes		Yes		Yes	
Time fixed-effects	Yes		Yes		Yes	
Observations	40,970		40,970		40,970	
R^2	0.151		0.151		0.151	

* $p < 0.10$; ** $p < 0.05$; *** $p < 0.01$.

Note. Corrected standard errors in parentheses. (Female/Male) full time employee is measured through a dummy variable that takes the value 1 if the individual is full time employee and 0 otherwise.

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