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Does crime reduce fertility? Evidence from Jamaica

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Abstract

Jamaica has experienced a rapid decline in fertility over the past few decades, alongside persistently high levels of serious crime. However, no prior research has explored whether and how these two phenomena are linked. We use data comprised of several categories of crime to estimate the effect of crime on fertility in Jamaica. We find that the fertility of adolescent and older women responds differently to crime. While total crime reduces fertility among adolescent women, we find no effect on fertility for older women. However, serious crime reduces fertility in both groups, with a stronger impact among younger women. We provide an explanation for this heterogeneity. Our findings suggest that policymakers formulate innovative strategies to curb crime, as fertility has long-term implications for economic development.

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1. INTRODUCTION

This paper empirically examines the response of fertility to crime in a developing country setting. Since the 1970s, the fertility rate in Jamaica has declined dramatically (see Figure 1), while Jamaica also has some of the highest crime rates in the world, particularly for violent homicide (see Figure 2). Yet these two phenomena are often discussed in isolation. This is surprising because both fertility and crime have implications for long-term economic development, and Jamaica's economic performance over the past several decades has been, at best, anemic.[1] In this paper, we bring these two phenomena together.

To understand the nature of the decline in fertility over the past five decades, we present in Figure 1 and Panel A the evolution of total fertility from 1970 to 2022. Over this period, the fertility rate has decreased from 5.6 births per woman of child-bearing age in 1970 to 1.34 births per woman in 2022. Jamaica's total fertility rate is now below the replacement level of 2.1 births per woman. In Panel B, adolescent fertility displays a similar trend to total fertility.

There are socioeconomic consequences of such a dramatic decline in birth rates. For example, "Lower birth rates result in a smaller working-age population, which in turn affects productivity and increases the burden on social support systems" (Stanley, 2024). Thus, the severity of the decline in birth rates may have adverse implications for Jamaica's economic development. Several seminal papers have incorporated fertility in theoretical models of economic growth (Barro and Becker, 1989; Becker and Barro, 1988; Becker et al., 1990; Galor and Weil, 1996) and empirical analyses (Borg, 1989; Silva and Tenreyro, 2017; Churchill et al., 2022; Neanidis and Papadopoulou, 2013).

[1] More recently, Jamaica's economy has been stabilized, however. From its astronomical level of 175 percent of GDP in 1990, the debt has reduced to 72 percent of GDP in 2023 (Arslanalp et al., 2024). Reduced debt levels notwithstanding, economic growth and the allocation of credit are poor.

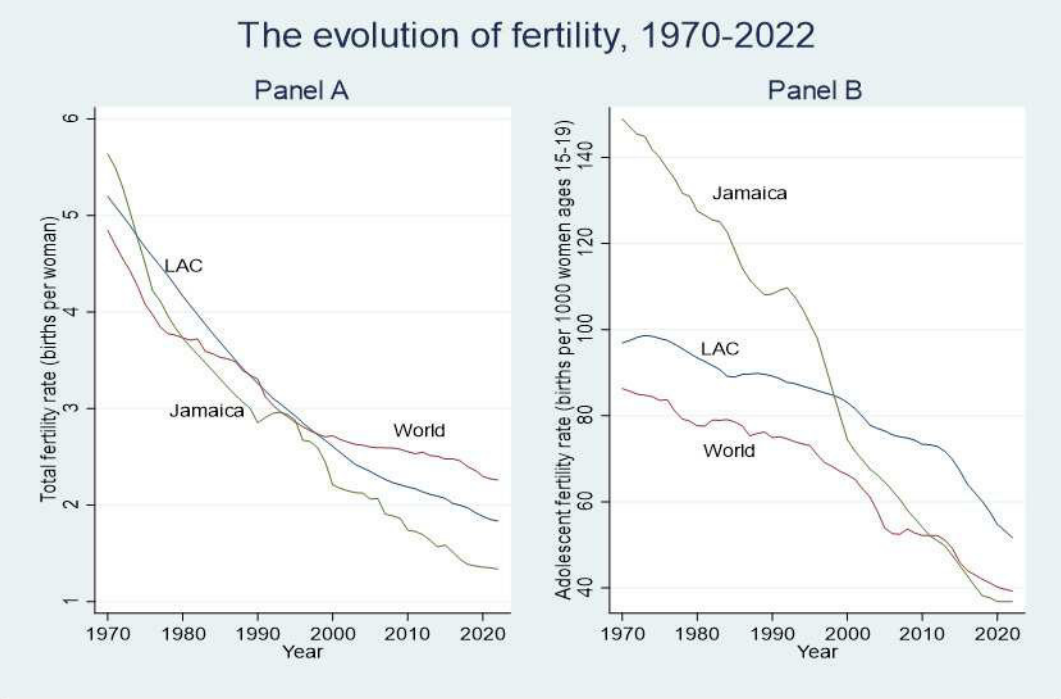

Figure 1: Panel A shows the evolution of total fertility rate over the 1970-2022 period in Jamaica, Latin America and the Caribbean (LAC), and the World. Panel B displays the evolution of adolescent fertility over the 1970-2022 period in Jamaica, LAC, and the World. The data is from the World Bank, World Development Indicators.

No scholar, as far as we are aware, has attempted to connect the decline in fertility in Jamaica with the high crime rates. With 53.3 deaths per 100 000 population, Jamaica had the highest violent homicide rate in the world in 2022. This compares to St. Vincent and the Grenadines (40.4), Trinidad and Tobago (39.5),[2] as well as the world average of 6.1. In 2005, Jamaica's murder rate was even higher (see Figure 2)[3], at 61.43 per 100 000 population.[4] More than half the population reported being affected in some way by violent homicide (Sutton, 2017). In this high-crime setting, couples are more likely to reconsider their fertility decisions due to the likelihood of their off-spring becoming victims of crime and not surviving to adulthood. By contrast, couples may compensate by having more births to increase the chance of some surviving to adulthood. Hence, the response of fertility to crime in Jamaica is an empirical question.

Jamaica provides an ideal context to shed light on the relationship between fertility and crime for several reasons. First, as mentioned above, Jamaica is consistently ranked among the countries

[2] St. Vincent and Grenadines and Trinidad and Tobago ranked second and third, respectively. https://worldpopulationreview.com/country-rankings/murder-rate-by-country.

[3] Domestic and gang-related violence are a major driver of murder in Jamaica (Grillo, 2016; https://jcf.gov.jm/10925-2/), which the government has found difficult to control. As a result, the government has used extreme measures, such as declaring states of public emergency to control murder. Couples are, therefore, more likely to delay childbearing during periods of high violent crime due to concerns about their children potentially becoming victims. Note also that the continued improvement in the Jamaican economy may help the decline in property crimes (break-ins, robbery, and larceny) as well as the large and persistent inflows of remittances (Kafour and Williams, 2024).

[4] We obtained this information from the Jamaica Constabulary Force (JCF) statistical office.

with highest murder rate. From 1976 to 2022, 44, 432 persons were violently killed in Jamaica. This high murder rate, along with relatively high rates of other types of crime, is a major concern for policymakers. In responding to the high crime rates, Prime Minister Andrew Holness asserted, "The extraordinary level of violent crimes in Jamaica has been a feature of our society for far too long, and while it has impaired our development for decades, the greatest cost to our nation has been the many lives that have been lost."[5]

Second, Jamaica's fertility rate is also among the lowest in the world. For example, over the past five decades, the annual average fertility rate in Jamaica has been below that of Latin America and the Caribbean, as well as the world average (see Figure 1). Since 2005, the fertility rate has been below the replacement rate of 2.1 births per woman. Third, we accessed a unique crime dataset from the Jamaica Constabulary Force statistical office that comprises six crime types, ranging from murders to less serious crimes such as larceny. We also compute indicators for total crime, serious crime, and property crime. This information allows us to pinpoint which categories of crime are more likely to affect fertility.

Our indicator of serious crime has a negative effect on fertility. When we disaggregate crime into different categories, we find that all measures of serious crime – such as rape, shootings, and murder – are negatively associated with fertility. However, we find no statistically significant relationship between our indicator of property crime or its components (break-ins, robbery, and larceny) with fertility. We also find that total fertility, which captures birth rates for women aged 15-49, and adolescent fertility, which captures birth rates for women aged 15-19, respond differently to our index of total crime. While total crime is negatively associated with the fertility rate for younger women, we find no significant association with the fertility rate for women aged 15-49. These findings point to an underexplored channel that can affect birth rates in developing countries. We also document that economic, health, and education factors robustly predict fertility.

The paper's central contributions are twofold. First, we provide an assessment of one potential explanation for the decline in fertility in a developing country with a high crime rate. Our paper offers important lessons for similar countries that lack the institutional capacity to compile information on different crime types. Our contribution in explaining the fall in fertility rates in Jamaica due to the high crime rates is informative, as no previous effort has been made to consider this channel.

Second, unlike previous contributions mainly from developed countries that focus on a narrow range of crimes (Huang Jr et al., 2015; Churchill et al., 2022), we rely on several categories of crime to estimate the response of fertility. We do so because it is possible that fertility responds differentially to various dimensions of crime. Our approach, using several categories of crime, therefore yields a more nuanced picture. Although we expect crime to shape fertility, we find that the response of fertility to crime is heterogeneous across different types of crime, justifying the use of multiple categories. The limited evidence on the impact of crime on fertility in developing

[5] http://jamaica-gleaner.com/article/news/20190502/police-mobile-reserve-be-disbanded-commander-terrence-bentsent-leave-amid.

countries reflects the absence of comprehensive crime data, a gap this paper addresses by using several crime types.

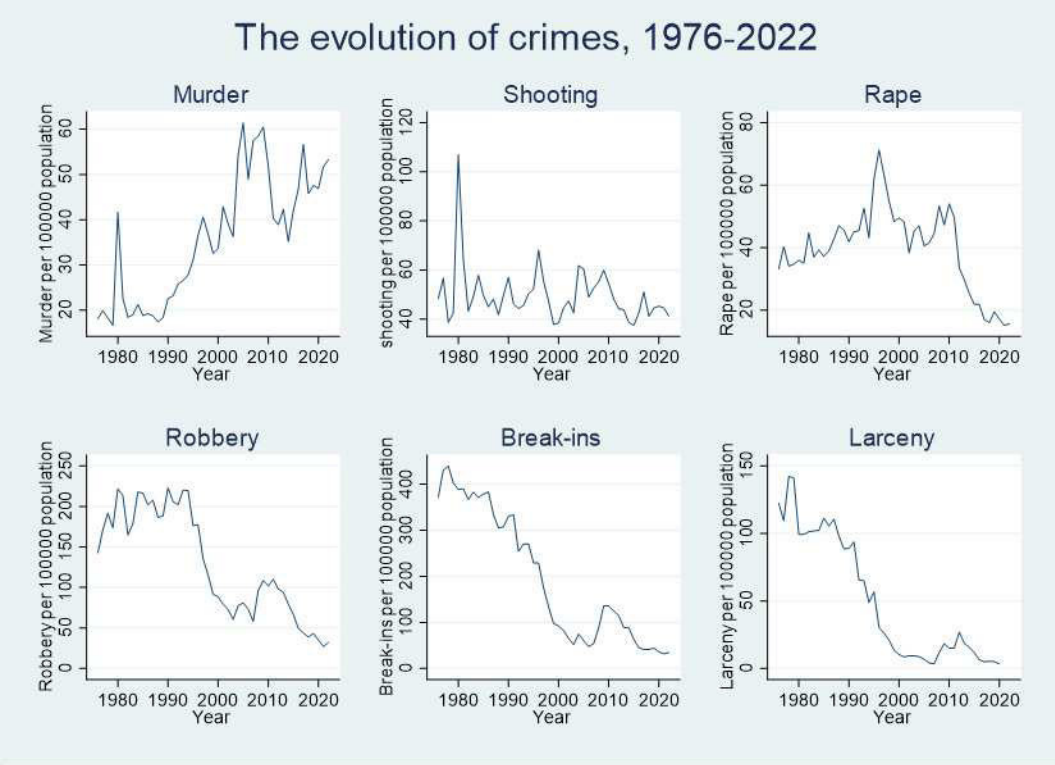

Figure 2: This figure shows the six crime types per 100000 population. Source: the Jamaica Constabulary Force.

2. RELATED LITERATURE

This paper is related to different strands of the literature. First, a dominant view in the literature, dating back to Becker (1960), is that increased family income drives demand for more children. Borg (1989), using cross-sectional data from Korea, finds support for this hypothesis; but only if the net price of children is accounted for, including education expenses as well as the opportunity cost of wives' time in taking care of their children. Black et al. (2013) use shocks to husbands' income arising from the large increases in coal prices in the 1970s in the U.S. coal-mining region to explore the impact of economic activity on fertility. Their findings support Becker's (1960) hypothesis. Donald et al. (2024) use experimental data from Sub-Saharan Africa and show that fertility responds positively to exogenous increases in women's income and household wealth, though the response is stronger for women from poor families and is driven by the desire to have sons – a strategy women use to secure their future wellbeing in the absence of property rights over land ownership. Lovenheim and Mumford (2013) examine house price driven changes in household wealth and find that, across the states of the U.S., household wealth increases childbirth among women aged 25-44, but not for teenage mothers.

Using U.S. data, Bar et al. (2018) show, both theoretically and empirically, that as inequality increases the time cost of childcare decreases. This allows wealthier women to have more children while simultaneously pursuing a career. However, Córdoba and Ripoll (2016) argue that constraints on intergenerational transfers are central to explaining the impact of income on fertility. They conclude that if parents could compel their children to pay at a future date, the costs of raising them, then income would be independent of fertility. Other scholars also find that the economic environment is a reliable predictor of fertility (Adsera and Menedez, 2011; Apps and Rees, 2004; Brewster and Rindfuss, 2000; Jensen, 2012; Lambert and Rossi, 2016; Rossi and Godard, 2022).

Second, another strand of literature considers how bargaining between couples determines fertility outcomes. For example, using Demographic Health Survey data for 18 developing countries, Bankole and Singh (1998) document that husbands and wives have different fertility goals. If husbands prefer larger families and having children sooner rather than later, the decline in fertility in developing countries is likely to have been initiated by wives. Beckman (1984) argues that in developing countries, men's views about fertility are likely to prevail over women's. Using two waves of data from 1984 and 1986 among the Yoruba in Nigeria, Bankole (1995) examines the effect of marital fertility desires on actual fertility outcomes. He shows that joint fertility desires between men and women predict fertility behavior. However, when there are differences in fertility desires, the number of children becomes decisive: husbands' preferences dominate when there are few surviving children, while wives' preferences determine births when there are a larger number of living children. Brodmann et al. (2007) assess the role of paternal care in women's decision to have a second child in Denmark and Spain. While external childcare has no effect on fertility, Danish women's decisions to have a second child is influenced by the role their partners play in childcare. Distinct from these studies, our central focus is the impact of different dimensions of crime on fertility.

Finally, our paper also advances the literature investigating the link between crime and fertility. The legalization of abortion in the U.S. in 1973 provides an exogenous variation that enables Donohue III and Levitt (2001) to study the impact of abortion on crimes. They show that states with higher abortion rates experienced larger reductions in crimes, finding that legalized abortion reduced crimes in the U.S. by 50 percent. Using U.S. state-level data over the period from 1957 to 2002, Kendall and Tamura (2010) find that children born out of wedlock commit more crimes, such as murder and property crimes. Our paper, however, asks a different question: the impact of crime on fertility.

The papers closest to ours document that crime increases fertility across Local Government Areas in Australia (Churchill et al., 2022), while by contrast, crime reduces fertility based on data from Taiwan over the 2000-2010 period (Huang Jr et al., 2015). Churchill et al. (2022) develop a theoretical model and test it empirically, showing that labor market conditions, house prices, and school quality are channels through which crime affects fertility. Our context differs from that of Churchill et al. (2022) and Haung Jr et al. (2015),[6] who focus on developed countries, while we

[6] The empirical section of Neanidis and Papadopoulou (2013) uses the probability of avoiding arrest to measure crime and finds that crime increases fertility in a sample of 90 countries over the 1970-2008 period. Our crime dataset is, however, more comprehensive and we again consider a different setting.

explore a developing country with a high crime rate, where the implications of crime are arguably more consequential. For instance, the main source of hard foreign currency for Jamaica is tourism, which is highly sensitive to crimes, particularly violent crimes.[7] Our rich dataset on various indicators of violent and property crimes enables us to provide more nuanced evidence of the response of fertility in a low-fertility, high-crime setting. Our paper also advances the literature that explores the connection between fertility and women's agency in developing countries (Bose and Das, 2024).

3. EMPIRICAL STRATEGY AND DATA

We use annual data from 1976 to 2022 to estimate the effect of crime on fertility in Jamaica. Our dataset begins in 1976 because most of our control variables, discussed below, have observations starting in that year. Our crime data comprise six categories: rape, murder, break-ins, robbery, shooting, and larceny. We also use these crime types to construct three additional measures: total crime, serious crime, and property crime. Total crime is a composite measure that includes all categories, while serious crime comprises rape, murder, and shooting, and property crime includes break-ins, robbery, and larceny. We collect our crime data from the Jamaica Constabulary Force, and we normalize the crime types per 100 000 population.

Our primary measures of fertility are total fertility rate (women aged 15-49)[8] and the adolescent fertility rate per 1000 women aged 15-19. In unreported results, we use the crude birth rate per 1,000 people and the population growth rate as alternative measures of fertility, and we find results similar to those obtained with our primary fertility measures. Following the literature, we include several control variables in our regressions to alleviate concerns about omitted variable bias and to ensure that the coefficients on the crime variables are precisely estimated. We include the log of secondary school enrollment to control for the possibility that more educated women (and an educated population in general) tend to delay childbearing for career consideration (Adserá, 2004; Angeles, 2010). We include the log of government expenditure on health and education to account for fiscal policy and public goods provision (Anwar and Mughal, 2016). We control for remittance inflows by including the log remittance receipts because Jamaica is a leading recipient of remittances, which account for the second largest share of hard currency after tourism. Evidence shows that remittances reduce fertility in Jamaica (Mcfarlane et al., 2023). We also control for the urbanization rate to assess the hypothesis that urban settings offer more opportunities along several margins, which raise the opportunity cost of childbearing (Melki et al., 2024). Additionally, we use log per capita GDP as a proxy for economic opportunities, which incentivizes women to delay childbearing (Doepke et al., 2022). We obtained these data from the World Development Indicators database.

We also include a marriage market variable – marriage as a share of the population – obtained from the Statistical Institute of Jamaica (STATIN), as well as the crime clear-up rate from the

[7] Through its Embassy in Jamaica, the U.S., which is the main source of tourists to Jamaica, frequently issues advisory to its citizens traveling to Jamaica. When the Embassy issues a travel advisory, the Jamaica economy suffers. As recently as January 23, 2024, the Embassy advised its citizens "… to reconsider travel to Jamaica due to crime …" https://www.jamaicaobserver.com/2024/02/21/no-hidden-agenda-travel-advisory-says-us-government-official/.

[8] The number of children that would be born to a woman if she were to live to the end of her childbearing years.

Jamaica Constabulary Force.[9] Marriage provides a stable institution for childbearing, and families are more likely to consider having children in settings with high crime clear-up rates, because of the lower likelihood of crime being unresolved and the deterrent effect this may have on potential offenders.

We present summary statistics in Table 1. There is considerable variation in the data; for example, break-ins have a mean of 196 with a standard deviation of 141, and the incidence ranges from 31 to 439.

Table 1: Summary statistics

	Mean	Std. dev.	Min	Max
Rape/100 000 pop	39.682	13.101	15.101	71.318
Robbery/100 000pop	128.955	65.574	27.160	223.095
Break-ins/100 000pop	196.263	141.278	31.899	439.728
Larceny/100 000pop	50.319	46.101	3.439	142.299
Murder/100 000pop	35.838	14.031	16.667	61.431
Shooting/100 000pop	49.674	11.239	37.459	107.043
Government spending on education/gdp	4.740	1.360	1.182	6.750
Government spending on health/gdp	5.018	5.043	0.896	28.292
Secondary school enrollment	76.10.962	10.961	62	92.9
Remittances/gdp	10.597	6.236	2.326	25.289
Urban/population	51.351	3.257	44.557	57.008
Per capita GDP	4768.124	524.264	3683.77	5440.125
Adolescent fertility rate	83.986	34.570	32.021	136.301
Total fertility rate	2.508	0.852	1.34	4.218
Marriage/total population	0.006	0.002	0.003	0.011
Crime clear-up rate	59.701	15.270	22.657	85. 248

Notes: Crime is expressed per 100 000 population.

Our estimating equation is summarized as follows:

$$Fertility_t = \alpha_1 Crime_t + \Sigma^7_{j=1} \alpha_{tj} B_{tj} + \mu_t, \quad (1)$$

where fertility is either total fertility or the adolescent fertility. Crime is one of the several measures of criminal activity. B_{tj} is the vector of control variables discussed above; j denotes

[9] We thank an anonymous referee for suggesting that we include these controls in the model.

each control variable and t denotes year; μ_t is an error term that captures time-varying shocks to fertility and crime.

We next check for unit roots in each series using the Augmented Dickey-Fuller test, given the time-series structure of our annual data. Each series is non-stationary in levels but stationary in first differences; that is, they are integrated of order one, I(1).[10] We therefore use the Johansen test for co-integration and find that the series are co-integrated. This enables us to use the vector error correction model (VECM), which captures short-run dynamics and long-run relationships, including the error correction term (ECT). The ECT tells us how correction is made in a given period to bring the variables back to their long-run equilibrium, after any deviation in the previous period.

4. RESULTS AND DISCUSSION

Table 2 presents the estimates of the long-run effect of crime on fertility, using log total fertility as the outcome variable. The Error Correction Model (ECM) coefficient estimates at the bottom of the table suggest that we can be fairly confident that the series are co-integrated. Therefore, although the series may deviate in the short run, a long-run relationship exists.[11] Throughout the paper, we do not report the short-run results for the crime types because they are not statistically significant at any conventional significance level. Column 1 uses total crime as the main regressor. The coefficient estimate for total crime is negative but statistically insignificant. Our indicator of serious crime is statistically significantly correlated with total fertility, while the indicator of property crime is statistically insignificant.

When we disaggregate serious crime into different categories, we find that rape, murder, and shootings are statistically significantly correlated with total fertility. However, the different components of property crime – robbery, break-ins, and larceny – are not significantly correlated with total fertility. It is reasonable to expect crime to discourage couples from having children due to the likelihood of their offspring being victims of crime and possibly being maimed or killed before researching adulthood. What is surprising, however, is that total crime, which comprised all categories of crime appears to have no significant correlation with fertility for women aged 15-49.

The most plausible interpretation of this finding is that, in the long run, couples are more likely to be discouraged from having children due to serious crime – such as rape, murder, and shooting – rather than property crime: larceny, robbery, and break-ins. Violent crime leading to murder, for example, is particular high in Jamaica. Our estimates suggest that it is the violent nature of crime in Jamaica that exerts the strongest influence on fertility for women aged 15-49. The size of the estimated coefficient on all categories of serious crime is broadly similar. Quantitatively, a 10 percent increase in the murder rate is associated with a 0.63 percent reduction in the birth rate for women aged 15-49. The corresponding effects for rape and shootings are 0.54 and 0.84 percent,

[10] We suppressed these results to save space, but they are available upon request.

[11] To confirm the absence of any short-run impact of crime on fertility, we conduct a Granger causality test within the VECM framework. The results indicate that the null hypothesis of no short-run Granger causality could not be rejected at conventional levels of significance, suggesting that crime does not exert a statistically significant short-run influence on fertility. It is important to note also that no reverse causality was detected as well.

respectively. By using several categories of crime, we can identify which dimensions of crime are most relevant for fertility among women aged 15-49.

Turning to the control variables, we observe that government expenditure on education has a statistically significant and negative effect on total fertility. During the 1970s, many developing countries invested heavily in education campaigns to encourage couples to have fewer children. The Jamaican government, during this period, promoted a policy of having only two children instead of four, known as the "two is better than two many" campaign, to reduce fertility. Since our data goes back to 1976, it is possible that the negative coefficient estimate on government education expenditure reflects some of that earlier fertility-reducing effect (Silva and Tenreyro, 2017).

The coefficient estimate on government health expenditure is positive and statistically significantly correlated with total fertility, indicating that when women have access to better and improved prenatal and postnatal care in public health facilities, they are more inclined to have children. The coefficient estimate on education enrollment is statistically significant and positive, suggesting that educated women can reconcile work and family life by purchasing childcare services in private markets (Doepke et al., 2022). Remittances have a positive effect on fertility, counterbalancing previous evidence from Jamaica (McFarlane et al., 2023). One interpretation is that, since a large share of remittances goes to poor households, these couples gain access to resources that alleviate the economic constraints discouraging childbearing. We also find that urbanization reduces fertility, implying that increased economic activity in urban settings raises the opportunity cost of childbearing, leading women to have fewer births in urban areas (Neanidis and Papadopoulou, 2013). The lack of adequate spaces in urban areas may also discourage childbearing. The coefficient estimate on the marriage market control is negative and statistically significantly correlated with fertility, suggesting that marriage is associated with lower fertility. The underlying intuition is that marriage provides a more stable institution in which couples can make decisions about the number of children they will have. Depending on the model specification, there is some evidence that higher crime clear-up rate is negatively correlated with fertility. This finding may suggest that as crime clear-up rates improve and the economy generates more jobs, women are postponing childbearing because they feel safer and are taking advantage of increased economic opportunities.

In Table 3, we analyze a more narrowly defined group of women (aged 15-19) to estimate the response of adolescent fertility to crime. We find differences in how younger women's fertility responds to crime in Jamaica relative to the overall cohort of childbearing women. Contrary to the evidence for female fertility as a whole (women aged 15-49), we find that total crime has a negative and statistically significant effect on fertility for adolescent women. Importantly, while the indicator of serious crime and its components are negative and statistically significantly correlated with fertility both for women aged 15-49 and 15-19, we find that the size of these effects are stronger for adolescent women. For example, quantitatively, a 10 percent increase in the murder rate reduces fertility by 5.36 percent for adolescent women. The corresponding impact is 0.60 percent for women aged 15-49. Younger women may therefore be more concerned about the environment in which they are raising their children, making them more sensitive to the severity and levels of crime when deciding about fertility. This explanation is plausible because women aged 15-19 are at the early stages of their reproductive cycle, and they may choose to delay childbirth, hoping that the crime situation will improve before bringing their child into the world. In contrast, older women have a narrower fertility window within which to consider having

children, making them less responsive to crime. Consistent with Table 2, the control variables indicate that economic, health, and education indicators robustly predict fertility.[12]

[12] As new data becomes available, future research can explore whether our results hold at the parish level. The Jamaica Constabulary Force (JCF) subdivided Jamaica into 19 police divisions. Note that over the past quarter-century, the parish (division) of St. James recorded the highest number of murders (3991), while the parish of Portland recorded the lowest (272). The police division of St. Andrew South recorded the highest number of shootings (4386), while Portland recorded the least. The St. Catherine North division had the highest number of rapes and robbery (1547; 4175), while Portland recorded the least on both crime types. The parish of Manchester recorded the highest number of break-ins (5383), while the division of Kingston Western had the least (603). St. Andrew Central recorded the highest number of larceny (1318), while the parish of St. Thomas has the lowest (110). Overall, the most violent police divisions in Jamaica are: St. James, St. Andrew South, St. Catherine North, St. Catherine South, and Western Kingston. Portland, Trelawny, St. Mary, St. Elizabeth, and St. Thomas, are the least violent police divisions.

Table 2: Long-run impact of crime on total fertility

Dependent variable:	Log total fertility women aged 15-49								
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	Total crime	Serious crime	Property crime	Rape	Murder	Break-ins	Robbery	Shooting	Larceny
Log Crime	-0.041	-0.116***	-0.012	-0.054**	-0.063**	-0.003	-0.021	-0.086***	0.003
	(0.035)	(0.035)	(0.020)	(0.025)	(0.022)	(0.017)	(0.024)	(0.023)	(0.011)
Log gov't education spending	-0.194***	-0.235***	-0.212***	-0.173***	-0.214***	-0.202***	-0.192***	-0.217***	-0.225***
	(0.016)	(0.018)	(0.016)	(0.015)	(0.014)	(0.016)	(0.015)	(0.015)	(0.016)
Log gov't health spending	0.072***	0.063***	0.057***	0.078***	0.032***	0.056***	0.061***	0.054***	0.051***
	(0.015)	(0.010)	(0.014)	(0.010)	(0.007)	(0.013)	(0.015)	(0.008)	(0.011)
Log secondary enrollment	0.381**	0.303***	0.279**	0.377***	0.050	0.260**	0.262*	0.234**	0.244**
	(0.129)	(0.095)	(0.129)	(0.084)	(0.074)	(0.116)	(0.140)	(0.081)	(0.116)
Log remittances/gdp	0.210***	0.248***	0.218***	0.235***	0.236***	0.222***	0.205***	0.226***	0.247***
	(0.019)	(0.025)	(0.020)	(0.019)	(0.019)	(0.021)	(0.018)	(0.021)	(0.021)
Urbanization rate	-0.151***	-0.153***	-0.145***	-0.157***	-0.138***	-0.144***	-0.146***	-0.148***	-0.147***
	(0.009)	(0.005)	(0.007)	(0.006)	(0.003)	(0.006)	(0.008)	(0.004)	(0.006)
Log per capita GDP	-0.729***	-0.728***	-0.659***	-0.719***	-0.371***	-0.646***	-0.612***	-0.657***	-0.610***
	(0.087)	(0.083)	(0.085)	(0.067)	(0.066)	(0.084)	(0.081)	(0.072)	(0.080)
Log marriage/population	-0.103**	-0.048	-0.140***	-0.013	-0.170***	-0.132***	-0.113**	-0.098**	-0.194***
	(0.041)	(0.060)	(0.042)	(0.064)	(0.045)	(0.042)	(0.039)	(0.045)	(0.047)
Crime clear-up rate	-0.0003	-0.001***	-0.0002	-0.0004*	-0.0003	-0.0002	-0.0003	-0.001***	-0.0003
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
ECM	-0.176**	-0.161**	-0.166*	-0.161*	-0.150**	-0.171*	-0.157**	-0.178**	-0.163*
	(0.077)	(0.075)	(0.095)	(0.099)	(0.074)	(0.098)	(0.074)	(0.083)	(.0901)

Notes: Standard errors in parenthesis. *,**,*** significant at the 10%, 5%, and 1% levels, respectively.

Table 3: Long-run impact of crime on adolescent fertility

Dependent variable:	Log adolescent fertility per 1000 women aged 15-19								
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	Total crime	Serious crime	Property crime	Rape	Murder	Break-ins	Robbery	Shooting	Larceny
Log Crime	-0.197***	-0.536***	-0.016	-0.078**	-0.814***	-0.018	-0.079	-0.229***	0.014
	(0.050)	(0.104)	(0.037)	(0.040)	(0.106)	(0.027)	(0.048)	(0.049)	(0.019)
Log gov't education spending	-0.070**	-0.550***	-0.293***	-0.164***	-0.742***	-0.217***	-0.251***	-0.348***	-0.327***
	(0.023)	(0.055)	(.0301)	(0.024)	(0.069)	(0.025)	(0.030)	(0.033)	(0.028)
Log gov't health spending	0.217***	0.1335***	0.113***	0.135***	-0.015	0.121***	0.157***	0.090***	0.094***
	(0.022)	(0.032)	(0.026)	(0.016)	(0.036)	(0.021)	(0.030)	(0.018)	(0.019)
Log secondary enrollment	1.774***	1.336***	1.093***	1.182***	0.726**	1.119***	1.409***	0.912***	0.964***
	(0.185)	(0.284)	(0.232)	(0.130)	(0.353)	(0.182)	(0.275)	(0.171)	(0.195)
Log remittances/gdp	0.082**	0.455***	0.217***	0.148***	0.606***	0.165***	0.227***	0.271***	0.282***
	(0.027)	(0.074)	(0.037)	(0.030)	(0.094)	(0.033)	(0.036)	(0.045)	(0.037)
Urbanization rate	-0.216***	-0.238***	-0.186***	-0.189***	-0.171***	-0.181***	-0.210***	-0.197***	-0.189)
	(0.013)	(0.017)	(0.013)	(0.009)	(0.018)	(0.010)	(0.016)	(0.010)	(0.010)
Log per capita GDP	-1.776***	-1.934***	-1.520***	-1.414***	-0.928**	-1.455***	-1.653***	-1.361***	-1.362***
	(0.122)	(0.241)	(0.153)	(0.101)	(0.310)	(0.131)	(0.157)	(0.149)	(0.136)
Log marriage/population	0.481***	0.301*	0.167**	0.454***	0.108	0.260***	0.204**	0.117	0.034
	(0.056)	(0.174)	(0.074)	(0.100)	(0.210)	(0.064)	(0.075)	(0.093)	(0.077)
Crime clear-up rate	0.002***	-0.001	0.001***	0.001**	-0.001	0.002***	0.001**	0.000	0.001**
	(0.000)	(0.000)	(0.000)	(0.000)	(0.001)	(0.000)	(0.000)	(0.000)	(0.000)
ECM	-0.190**	-0.063**	-0.115*	-0.143**	-0.036	-0.145**	-0.119*	-0.102**	-0.121**
	(0.074)	(0.031)	(0.062)	(0.070)	(0.018)	(0.072)	(0.064)	(.0493)	(0.061)

Notes: Standard errors in parenthesis. *,**,*** significant at the 10%, 5%, and 1% levels, respectively.

5. CONCLUSION

Total fertility rates in Jamaica have fallen sharply over the past five decades. In 1970, total fertility stood at 5.6 births per woman of childbearing age, while today it is at 1.34, below the replacement level of 2.1. Figure 1 illustrates that total fertility and adolescent fertility in Jamaica are lower than its peers in Latin America and the Caribbean (LAC) and the world. What accounts for this decline? At the same time, Jamaica faces persistently high levels of crime, particular violent homicide. The country consistently ranks among those with the highest violent homicide rates (United Nations Office on Drugs and Crime, 2023).

No prior research has established whether and how crime affects fertility in Jamaica. This paper addresses this gap by using various crime types, constructed from data provided by the Jamaica Constabulary Force, to estimate the impact of crime on fertility. We find that the younger cohort of women (aged 15-19) responds differently to crime compared to the overall cohort of childbearing women (aged 15-49). While total crime reduces fertility for women aged 15-19, we find no statistically significant relationship for women aged 15-49. Additionally, serious crime and its various categories reduce fertility among adolescent as well as women aged 15-49, but the quantitative impact is greater on fertility for adolescent women. We conclude that older women may be less discouraged from having children in high-crime settings because they are nearing the end of their reproductive cycle and may not wish to run out of time. Younger women, on the other hand, may be more sensitive to crime, particularly serious crime, and therefore more inclined to delay childbirth, as they have a wider fertility window within which to do so. Overall, we find no evidence that property crime statistically significantly affects fertility in Jamaica.

While policymakers in Jamaica have attempted to curb serious crime with little success, the main implication of this paper is that they must devise innovate strategies to reduce serious crime, as it can generate long-term deadweight loss in various economic activities through lower fertility.

Declarations of Conflict of Interest

The authors acknowledge there are no financial or non-financial conflicts of interest.

REFERENCES

Adserá, A. (2004) “Changing fertility rate in developed countries. The impact of labor market institutions” *Journal of Population Economics* **17**, 1-27.

Adserá, A and A. Menendez (2011) Fertility changes in Latin America in periods of economic uncertainty. Population Studies **65**(1), 37-56.

Angeles, L. (2010) “Demographic transition: analyzing the effects of mortality on fertility” *Journal of Population Economics* **23**, 99–120.

Anwar, A. and M. Y. Mughal (2016) “Migrant remittances and fertility” *Applied Economics* **48**(36), 3399-3415.

Apps, P. and R. Rees (2004) "Fertility, taxation and family policy" *The Scandinavian Journal of Economics* **106**(4), 745-763.

Arslanalp, S., B. Eichengreen, and P. H. Blair (2024) "Sustained debt reduction: the Jamaican exception" NBER working paper number 32465.

Bankole, A. (1995) "Desired fertility and fertility behavior among the Yoruba of Nigeria: a study of couple preferences and subsequent fertility" *Population Studies*, **49**(2): 317-328.

Bankole, Akinrinola and S. Singh (1998) "Couple's fertility and contraception decision-making in developing countries: hearing the man's voice" *International Family Planning Perspectives* **24**(1), 15-24.

Bar, M., M. Hazan, O. Leukhina, D. Weiss, and H. Zoabi (2018) "Why did rich families increase their fertility? Inequality and marketization of child care" *Journal of Economic Growth* **23**, 427-463.

Barro, R. J. and G. S. Becker (1989) "Fertility choice in a model of economic growth" *Econometrica* **57(2)**, 481-501.

Becker, G. S. (1960). An economic analysis of fertility. NBER working paper number 6043.

Becker, G. S. and R. J. Barro (1988) "A reformulation of the economic theory of fertility" *The Quarterly Journal of Economics* **103**(1), 1-25.

Becker, G. S., K. M. Murphy, and R. Tamura (1990) "Human capital, fertility and economic growth" *Journal of Political Economy* **98**(5), S12-S37.

Beckman, L. A. (1984) "Husbands' and wives relative influence on fertility decision and outcomes" *Population and Environment* **7**(3), 182-197.

Black, D. A., N. Kolesnikova, S. G. Sanders, and L. J. Taylor (2013) "Are children "normal"?" *The review of economics and statistics* **95**(1), 21-33.

Borg, M. O. (1989) "The income-fertility relationship: effect of the net price of a child" *Demography* **26**(2), 301-310.

Bose, N. and S. Das (2024) "Reassessing the relationship between women's empowerment and fertility: Evidence from India" *Review of Development Economics* **28**(2), 544-573.

Brewster, K. L. and R. R. Rindfuss (2000). "Fertility and women's employment in industrialized nations" *Annual Review of Sociology* **26**, 271-296.

Brodmann, S., G. Esping-Andersen, and M. Güell (2007). "When fertility is bargained: second births in Denmark and Spain" *European Sociological Review* **23**(5), 599-613.

Churchill, S. A., R. Smyth, T. Trinh, and S. L. Yew (2022) "Local crime and fertility" *Journal of Economic Behavior & Organization* **200**, 312-331.

Córdoba, J. C. and M. Ripoll (2016) "Intergenerational transfer and the fertility-income relationship" *The Economic Journal* **126**(593), 949-977.

Doepke, M., A. Hannusch, F. Kindermann, and M. Tertilt (2022) "The economics of fertility: a new era" NBER working paper number 29948.

Donald, A., M. Goldstein, T. Koroknay-Palicz, and M. Sage (2024) "The fertility impacts of development programs" World Bank policy working paper number 10848.

Donohue III, J. J. and S. D. Levitt (2001) "The impact of legalized abortion on crime" *The Quarterly Journal of Economics* **2**, 379-420.

Galor, O. and D. N. Weil (1996) "The gender gap, fertility, and growth" *The American Economic Review* **86**(3), 374-387.

Grillo, I. (2016). Gangster warlords: drugs dollars, killing fields and the new politics of Latin America. Bloomsbury Publishing Plc. : London.

Haung Jr. T., T. Chiang, and J. Pan (2015) "Fertility and crime: evidence from spatial analysis of Taiwan" *Journal of Family and Economic Issues* **36**,319-327.

Jensen, R. (2012) "Do labor market opportunities affect young women's work and family decisions? Experimental evidence from India" *The Quarterly Journal of Economics* 127(2), 753-792.

Kendall, T. D. and R. Tamura (2010) "Unmarried fertility, crime, and social stigma" *The Journal of Law & Economics* **53**(1), 185-221.

Kufour, N. K. and K. Williams (2024) "A source of funding for illicit activities or a solution to crime? Evidence from remittances to Jamaica" *Journal of International Development* 36(1), 3-25.

Lambert, S. and P. Rossi (2016) "Sons as widowhood insurance: evidence from Senegal" *Journal of Development Economics* **120**, 113-127.

Loveheim, M. F. and K. J. Mumford (2013) "Do family wealth shocks affect fertility choices? Evidence from the housing market" *The Review of Economics and Statistics* **95**(2), 464-475.

McFarlance, A., L. Brown, and A. Das (2023) "Remittances and fertility in Jamaica" *Applied Economics Letters* **31**(14), 1305–1309.

Melki, M., H. Rapoport, E. Spolaore, and R. Wacziarg (2024) "Cultural remittances and modern fertility" NBER working paper number 32990.

Neanidis, K. C. and V. Papadopoulou (2013) "Crime, fertility, and economic growth: theory and evidence" Journal of Economic Behavior & Organization **91**, 101-121.

Rossi, P. and M. Godard (2022) "The old-age security motive for fertility: evidence from the extension of social pensions in Namibia" *American Economic Journal: Economic Policy* **14**(4), 488-518.

Silva, T. de and S. Tenreyro (2017) "Population control policies and fertility convergence" *Journal of Economic Perspectives* **31**(4), 205-228.

Stanley, A. (2024) "Demographic decline: falling fertility and aging populations pose significant challenges for many economies" *Finance and Development* **61**(3): 16-17. '

Sutton, H. (2017) "Unpacking the high cost of crime in the Caribbean: violent crime, the private sector, and the government response" in *The costs of crime and violence: new evidence and*

insights in Latin America and the Caribbean by L. Jaitman, Eds., Inter-American Development Bank: Washington, DC, 79-88.

United Nations Office on Drugs and Crime (2023) “UNODC Global Study on Homicide 2023: Homicide and organized crime in Latin America and the Caribbean” UNODC: Vienna.