

Methodology Report

International Migrant Stock 2020



United Nations Department of Economic and Social Affairs, Population Division

The Department of Economic and Social Affairs of the United Nations Secretariat is a vital interface between global policies in the economic, social and environmental spheres and national action. The Department works in three main interlinked areas: (i) it compiles, generates and analyses a wide range of economic, social and environmental data and information on which States Members of the United Nations draw to review common problems and take stock of policy options; (ii) it facilitates the negotiations of Member States in many intergovernmental bodies on joint courses of action to address ongoing or emerging global challenges; and (iii) it advises interested Governments on the ways and means of translating policy frameworks developed in United Nations conferences and summits into programmes at the country level and, through technical assistance, helps build national capacities.

The Population Division of the Department of Economic and Social Affairs provides the international community with timely and accessible population data and analysis of population trends and development outcomes for all countries and areas of the world. To this end, the Division undertakes regular studies of population size and characteristics and of all three components of population change (fertility, mortality and migration). Founded in 1946, the Population Division provides substantive support on population and development issues to the United Nations General Assembly, the Economic and Social Council and the Commission on Population and Development. It also leads or participates in various interagency coordination mechanisms of the United Nations system. The work of the Division also contributes to strengthening the capacity of Member States to monitor population trends and to address current and emerging population issues.

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Notes on regions, development groups, countries or areas

The designations employed in this publication and the material presented in it do not imply the expression of any opinions whatsoever on the part of the Secretariat of the United Nations concerning the legal status of any country, territory, city or area or of its authorities, or concerning the delimitation of its frontiers or boundaries. The term "country" as used in this report also refers, as appropriate, to territories or areas.

In this publication, data for countries and areas are often aggregated in six continental regions: Africa, Asia, Europe, Latin America and the Caribbean, Northern America, and Oceania. Further information on continental regions is available from https://unstats.un.org/unsd/methodology/m49/. Countries and areas have also been grouped into geographic regions based on the classification being used to track progress towards the Sustainable Development Goals of the United Nations (see: https://unstats.un.org/sdgs/indicators/regional-groups/).

The designation of "more developed" and "less developed", or "developed" and "developing", is intended for statistical purposes and does not express a judgment about the stage in the development process reached by a particular country or area. More developed regions comprise all countries and areas of Europe and Northern America, plus Australia, New Zealand and Japan. Less developed regions comprise all countries and areas of Africa, Asia (excluding Japan), Latin America and the Caribbean, and Oceania excluding Australia and New Zealand.

The group of least developed countries (LDCs) includes 47 countries, located in sub-Saharan Africa (32), Northern Africa and Western Asia (2), Central and Southern Asia (4), Eastern and South-Eastern Asia (4), Latin America and the Caribbean (1), and Oceania (4). Further information is available at http://unohrlls.org/about-ldcs/.

The group of Landlocked Developing Countries (LLDCs) includes 32 countries or territories, located in sub-Saharan Africa (16), Northern Africa and Western Asia (2), Central and Southern Asia (8), Eastern and South-Eastern Asia (2), Latin America and the Caribbean (2), and Europe and Northern America (2). Further information is available at http://unohrlls.org/about-lldcs/.

The group of Small Island Developing States (SIDS) includes 58 countries or territories, located in the Caribbean (29), the Pacific (20), and the Atlantic, Indian Ocean, Mediterranean and South China Sea (AIMS) (9). Further information is available at http://unohrlls.org/about-sids/.

The classification of countries and areas by income level is based on gross national income (GNI) per capita as reported by the World Bank (June 2020). These income groups are not available for all countries and areas. Further information is available at:

https://datahelpdesk.worldbank.org/knowledgebase/articles/906519-world-bank-country-and-lending-groups.

DOCUMENTATION

The dataset entitled *International Migrant Stock 2020* provides estimates of the international migrant stock by age, sex, destination and origin for the mid-point (1 July) of each year: 1990, 1995, 2000, 2005, 2010, 2015 and 2020.

The dataset makes use of the following symbols:

A minus sign (-) before a figure indicates a decrease or negative number.

A full stop (.) is used to indicate decimals.

Use of a hyphen (-) between years, for example, 1995-2000, signifies the full period involved, from 1 July of the first year to 1 July of the second year.

An em dash (—) indicates that the magnitude is not zero, but less than half of the unit employed (i.e. is rounded to 0, when in fact it is not 0).

A 0 or 0.0 indicates that the magnitude is zero.

Two dots (..) indicate that data are not available or are not reported separately.

The tilde (\sim) indicates that the data are protected for privacy reasons because the number in the cell or the number used to derive the indicator in the cell is less than five.

Numbers and percentages in tables do not necessarily add to totals because of rounding.

A. Description of the dataset

The workbook Aggregates_correspondence_table_2020.xlsx provides general information about the countries or areas covered, the nature of the estimates presented or the aggregation of data for countries and areas into specific groups.

This section describes the worksheets contained in the following four Excel workbooks:

- (a) International migrant stock by sex and destination 2020.xlsx,
- (b) International migrant stock by sex and origin 2020.xlsx,
- (c) International migrant stock by sex destination and origin 2020.xlsx, and
- (d) International migrant stock by age sex and destination 2020.xlsx.

Each worksheet has a name located on its tab. The description of each worksheet is presented below following its name.

1. Worksheets providing general information

Table of contents: The workbook opens on this worksheet, which provides an index to the rest of the worksheets in the workbook.

Notes: This worksheet includes notes that provide specificities about the countries or areas covered or the nature of the estimates presented.

2. Worksheets providing estimates

The data tables have a consistent layout that includes a first column showing the sort order of the items listed, followed by (in some cases) the year, the name of each country, area and regional grouping, a further column showing notes with special information on particular entries (see the description of the worksheet Notes above), and a column showing the "code" for each country, area or regional grouping. The three-digit codes for countries or areas are those established by the International Standards Organization (ISO). For regional groupings, the codes presented are those used by the Population Division. The next column contains codes indicating the type of data used in deriving the estimates

presented. The codes used are: B, which indicates that estimates were derived from data on the foreign-born population; C, which indicates that estimates were derived from data on foreign citizens; R, which indicates that the number of refugees or persons in refugee-like situations, asylum seekers or Venezuelans displaced abroad as reported by the Office of the United Nations High Commissioner for Refugees (UNHCR) or, where appropriate, the United Nations Relief and Works Agency for Palestine Refugees in the Near East (UNRWA) were added to the estimates, and I, which indicates that there were no data on international migrants for the country or area concerned and that the estimates presented were imputed.

The content of the workbook International_migrant_stock_by_sex_and_destination_2020.xlsx is as follows:

- **Table 1** International migrant stock at mid-year by sex and by region, country or area of destination, 1990-2020. This table presents the complete set of estimates of the international migrant stock by sex and region, country or area of destination.
- **Table 2** Total population at mid-year by sex and by region, country or area of destination, 1990-2020 (thousands). This table presents estimates of the total population as published in World Population Prospects 2019. Some aggregates have been recomputed to reflect composition of aggregates on July 1st, 2020.
- **Table 3** International migrant stock as a percentage of the total population by sex and by region, country or area of destination, 1990-2020. The percentages shown are calculated by dividing the entries in Table 1 by those in Table 2 and expressing the results in percentages.
- **Table 4** Female migrants as a percentage of the international migrant stock by region, country or area of destination, 1990-2020. The percentages shown are calculated by dividing the number of female international migrants by the total migrant stock in Table 1 and expressing the results in percentages.
- **Table 5** Annual rate of change of the migrant stock by sex and by region, country or area of destination, 1990-2020 (percentage). The worksheet presents the estimated exponential annual rate of change of the international migrant stock, expressed as a percentage.
- **Table 6** Estimated refugee stock (including asylum seekers) at mid-year by region, country or area of destination, 1990-2020. The worksheet presents the number of refugees (including asylum seekers), the refugee population (including asylum seekers) as a percentage of the total migrant stock and the estimated exponential rate of change of the refugee population (including asylum seekers) per year expressed as a percentage. All indicators are based on the end-of-year 2019 estimates of refugee populations or persons in refugee-like situations, asylum seekers or Venezuelans displaced abroad as reported by the Office of the United Nations High Commissioner for Refugees (UNHCR) or, where appropriate, the United Nations Relief and Works Agency for Palestine Refugees in the Near East (UNRWA).

The content of the workbook International migrant stock by sex and origin 2020.xlsx is as follows:

- **Table 1** International migrant stock at mid-year by sex and by region, country or area of origin, 1990-2020. This table presents the complete set of estimates of the international migrant stock by sex and region, country or area of origin.
- **Table 2** Female migrants as a percentage of the international migrant stock by region, country or area of origin, 1990-2020. The percentages shown are calculated by dividing the number of female international migrants by the total migrant stock in Table 1 and expressing the results in percentages.

The content of the workbook International_migrant_stock_by_sex_destination_and_origin_2020.xlsx is as follows:

Table 1 International migrant stock at mid-year by sex and by region, country or area of destination and origin, 1990-2020. This table presents the complete set of estimates of the international migrant stock by sex and by region, country or area of destination and origin.

- **Table 2** International migrant stock at mid-year both sexes combined, by region of destination and origin, 2020. This table presents the international migrant stock for 2020 for both sexes by region of destination and origin.
- **Table 3** International migrant stock at mid-year both sexes combined, by region of destination and origin, 2015. This table presents the international migrant stock for 2015 for both sexes by region of destination and origin.
- **Table 4** International migrant stock at mid-year both sexes combined, by region of destination and origin, 2010. This table presents the international migrant stock for 2010 for both sexes by region of destination and origin.
- **Table 5** International migrant stock at mid-year both sexes combined, by region of destination and origin, 2005. This table presents the international migrant stock for 2005 for both sexes by region of destination and origin.
- **Table 6** International migrant stock at mid-year both sexes combined, by region of destination and origin, 2000. This table presents the international migrant stock for 2000 for both sexes by region of destination and origin.
- **Table 7** International migrant stock at mid-year both sexes combined, by region of destination and origin, 1995. This table presents the international migrant stock for 1995 for both sexes by region of destination and origin.
- **Table 8** International migrant stock at mid-year both sexes combined, by region of destination and origin, 1990. This table presents the international migrant stock for 1990 for both sexes by region of destination and origin.
- The content of the workbook International_migrant_stock_by_age_sex_and_destination_2020.xlsx is as follows:
- **Table 1** International migrant stock at mid-year by age and sex and by region, country or area of destination, 1990-2020. This table presents the complete set of estimates of the international migrant stock by age and sex and by region, country or area of destination.
- **Table 2** Total population at mid-year by age and sex and by region, country or area of destination, 1990-2020 (thousands). This table presents estimates of the total population as published in World Population Prospects 2019. Some aggregates have been recomputed to reflect composition of aggregates on July 1st, 2020.
- **Table 3** International migrant stock as percentage of the total population by age and sex and by region, country or area of destination, 1990-2020. The percentages shown are calculated by dividing the entries in Table 1 by those in Table 2 and expressing the results in percentages.
- **Table 4** Percentage distribution of the international migrant stock by age and sex and by region, country or area of destination, 1990-2020. The percentages shown are calculated by dividing the entries in Table 1 for the individual age groups by the total of these age groups for males and females separately and expressing the results in percentages.
- **Table 5** Female migrants as a percentage of the international migrant stock by age and by region, country or area of destination, 1990-2020. The percentages shown are calculated by dividing the number of female international migrants by the total migrant stock in Table 1 and expressing the results in percentages.
- **Table 6** *International migrant stock at mid-year by broad age groups and sex and by region, country or area of destination, 1990-2020.* This table presents international migrants by sex and broad age groups.

Table 7 International migrant stock as percentage of the total population by broad age groups and sex and by region, country or area of destination, 1990-2020. This table presents international migrants by sex and broad age groups as a percentage.

Table 8 Median age by sex and by region, country or area of destination, 1990-2020. This table presents the median age of international migrants by sex and by region, country or area of destination.

B. Methodology for estimating the migrant stock

This section provides information on the type of data and sources that have been used to collect the information and on the methods that have been applied to estimate the number as well as the distribution of the migrant stock by age, sex, destination and origin.

1. Reference years

The dataset *International Migrant Stock 2020* (United Nations database, POP/DB/MIG/Stock/Rev.2020) contains estimates of the total number of international migrants by country or area by age, sex, destination and origin. Estimates refer to 1 July of the reference years 1990, 1995, 2000, 2005, 2010, 2015 and 2020.

2. Types of data, definitions and sources

Most of the data used to estimate the international migrant stock by country or area were obtained from population censuses. Additionally, population registers and nationally representative surveys provided information on the number and composition of international migrants.

In estimating the international migrant stock, international migrants have been equated with the foreign-born population whenever this information is available, which is the case in most countries or areas. In most countries lacking data on place of birth, information on the country of citizenship of those enumerated was available and was used as the basis for the identification of international migrants, thus effectively equating, in these cases, international migrants with foreign citizens.

Equating international migrants with foreign citizens when estimating the migrant stock has important shortcomings. In countries where citizenship is conferred on the basis of *jus sanguinis*, people who were born in the country of residence may be included in the number of international migrants even though they may have never lived abroad. Conversely, persons who were born abroad and who naturalized in their country of residence are excluded from the stock of international migrants when using citizenship as the criterion to define international migrants.

Using country of citizenship as the basis for the identification of international migrants has also an impact on the age distribution of international migrants. In countries where citizenship is conferred mainly on *jus sanguinis*, children born to international migrants tend to be considered foreign citizens and are thus included in the count of international migrants. Conversely, in countries where citizenship is conferred based on *jus soli*, children born to international migrants are granted citizenship upon birth and are thus excluded from the migrant stock.

Despite these drawbacks, information by country of citizenship was used because ignoring it would have resulted in a lack of data for 46 countries or areas, equal to nearly 20 per cent of all countries and areas of the world.

The coverage of refugees in population censuses is uneven. In countries where asylum seekers have been granted refugee status and allowed to integrate, they are normally covered by the population census as any other international migrant. In such cases, there is no reason to add the number of refugees to estimate the international migrant stock, because in these cases refugees would already be included in the census data. However, in many countries, refugees lack freedom of movement and are required to reside in camps or other designated areas. In these cases, population censuses may ignore refugees. Furthermore,

when refugee flows occur rapidly in situations of conflict, it is uncommon for a population census to take place soon thereafter and to reflect the newly arrived refugee population.

Consequently, for many countries hosting large refugee populations, the refugee statistics reported by international agencies are the only source of information on persons who are recognized as refugees or find themselves in refugee-like situations. In order to ensure that the estimates of the international migrant stock reflect properly the numbers of refugees, the figures on refugees, asylum seekers and Venezuelans displaced abroad reported by the Office of the United Nations High Commissioner for Refugees (UNHCR) and the United Nations Relief and Works Agency for Palestine Refugees in the Near East (UNWRA) were added to the estimates of the international migrant stock for countries in less developed regions deemed not to have included refugees in their reported statistics on the stock of international migrants. For countries in more developed regions, where refugees admitted for resettlement as well as recognized asylum seekers are routinely included in population counts, be it by censuses or population registers, no such adjustment was made.

3. Data coverage

Among the 232 countries or areas included in this publication, 201, representing 87 per cent of the total, had at least one data source on the total migrant stock since the 2010 census round¹, 71 per cent of countries or areas had at least one data source on the age of international migrants, and 76 per cent of countries or areas had at least one data source on the origin of international migrants.

Table 1.

Availability of empirical data on the international migrant stock since the 2010 round of population censuses

	Countries or areas with at least one data source						International migrants estimated based on	
	Number By			Percentage By			empirical data Number	
Region and number of countries or areas	Total	By age	origin	Total	By age	origin	(thousands)	Percentage
World (232)	201	165	177	87	71	76	258,755	92
Sub-Saharan Africa (51)	43	33	39	84	65	76	19,854	89
Northern Africa and Western Asia (25)	20	14	13	80	56	52	46,428	93
Central and Southern Asia (14)	8	6	5	57	43	36	8,802	45
Eastern and South-Eastern Asia (18)	17	15	15	94	83	83	19,542	100
Latin America and the Caribbean (48)	42	35	37	88	73	77	14,501	98
Oceania (23)	22	16	21	96	70	91	9,378	100
Europe and Northern America (53)	49	46	47	92	87	89	140,249	96
Europe (48)	44	42	43	92	88	90	81,541	94
Northern America (5)	5	4	4	100	80	80	58,709	100

The availability of data on the number and basic characteristics of the migrant population differs significantly between regions. In Central and Southern Asia, 43 per cent of the countries does not have updated information on the total number of international migrants since the 2010 round of population censuses, 64 per cent of the countries did not publish recent data on the country of origin of international migrants, while updated statistics on the age of international migrants is lacking for 57 per cent of all countries. In Northern Africa and Western Asia, 20 per cent of the countries does not have data on the total number of international migrants since the 2010 census round, 44 per cent is lacking data on the age

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¹ The 2010 census round covers the period 2005-2014.

of international migrants, and 48 per cent does not have recent statistics on the country of origin of international migrants. In the regions sub-Saharan Africa, Latin America and the Caribbean, and Oceania data on total migrant stock are available for a large majority of all countries, but gaps in the availability of empirical data of international migrant stock by age and by origin persist. By contrast, updated information on the number of international migrants by age and country of origin is available for over 80 per cent of all countries in Eastern and South-Eastern Asia and in Europe and Northern America. When the availability of data is measured by the share of migrants estimated based on recent empirical data rather than by the number of countries with data, the data coverage is slightly higher for most regions and reaches 92 per cent for the world.

4. Standardization of age groups

Data on the age of international migrants are presented for standard five-year age groups commonly used in demographic analysis (that is, 0 to 4, 5 to 9, etc.). The oldest age group comprises all international migrants aged 75 years or over. In addition, data on the age of international migrants are presented for broad age groups (that is, 0 to 19, 20 to 64, and 65 years or over). In many cases, the empirically available data required some form of redistribution to ensure that the reported data could be used for estimates by five-year age group. The most common reason for redistribution was that the data contained at least one age group spanning ten years or more. In addition, a significant number of datasets included age groups that did not end in a 4 or a 9. Lastly, in several datasets the oldest (open-ended) age group had a starting age lower than 75 years. Various demographic techniques, including interpolation and Sprague coefficients, were used to standardize the age groups.

5. Standardization of country or area of origin

Data on the origin of international migrants were compiled and classified using the "Standard country or area codes for statistical use", available at https://unstats.un.org/unsd/methodology/m49/. In many cases, the available data required some form of redistribution to ensure that the reported data were consistent with the standard country or area codes. The most common reason for redistribution was that the data contained at least one description of origin spanning more than one country, area or region. In addition, a significant number of datasets included a description of origin that was not part of the standard list of countries or areas. Various methods were used to standardize the place of origin.

6. Estimation of migrant stock

The procedures for the estimation of migrant stock for the seven reference years from 1990 to 2020 varied depending on the availability and quality of data. For countries or areas without any data sources, another country or group of countries was used as a model. The "model" countries were selected based on various characteristics, including the criterion for enumerating international migrants and geographical proximity. Estimates, based on a regional or country model, are identified by the symbol (I), signifying that they were obtained by imputation. In total, estimates for six countries or areas were obtained by imputation: Bosnia and Herzegovina, the Democratic People's Republic of Korea, Eritrea, Holy See, Somalia and Western Sahara. For countries or areas with empirical data for only one point in time, relevant regional or subregional growth rates of international migrant stock by sex of the country or area of destination were used. For countries or areas with data for two or more points in time, interpolation or extrapolation was used to estimate the migrant stock for the seven reference years. The growth rate between any two consecutive data points was computed as follows:

$$r = \ln(M1/M0) / (t1 - t0)$$

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² For Bosnia and Herzegovina estimates were imputed based on data for Croatia, Serbia and the Former Yugoslav Republic of Macedonia; for the Democratic People's Republic of Korea based on data for Eastern Asia; for Eritrea based on data for Ethiopia and Sudan; for Holy See based on data from the *World Population Prospects 2019*; for Somalia based on data for Nigeria; and for Western Sahara based on data for Mauritania and Senegal.

where M1 refers to the migrant stock in year 1 and M0 to the migrant stock in year 0.

In the absence of empirical data for a specific time period, growth rates were held constant to those of available, adjacent time periods. Other methods were also used. Regression models, for instance, were used in some cases where annual or biennial empirical data were available. In some cases, estimates of total migrant stock were adjusted based on the estimated size of the total population by sex in the country of destination, as reported in the *World Population Prospects 2019*. For instance, growth rates for total migrant stock by sex were constrained so that the size of the migrant stock by sex would not exceed the estimated size of the total population by sex. Specific country circumstances such as sudden in or outmigration due to conflict, economic booms or busts, and major changes in migration policies were also considered. For cases identified by the symbol (R) (see section A above), persons forcibly displaced across international borders were excluded from the computation of growth rates. In such cases, estimates of refugees, asylum seekers and Venezuelans displaced abroad, as reported by UNHCR and UNRWA, were added to the estimates of other migrants by sex for the seven reference years.

In relation to the age of international migrants, where necessary, estimates were adjusted based on changes in the size of the migrant stock, the ageing of the migrant stock, the survivorship of migrants by age and sex in countries of destination, the age distribution of newly arriving and departing migrants, and the age distribution of the total population in the country of destination based on the *World Population Prospects 2019*. For each of these aspects, country and time-period specific weights were assigned, whenever possible. The age distribution of the newly arriving migrants is based on empirical or modelled data on flows of international migrants by age and sex to the destination country and Rogers and Castro's migration models (1981).³ In addition, estimates of international migrant stock by age and sex were adjusted for the data on the age and sex of refugees, asylum seekers and Venezuelans displaced abroad as reported by UNHCR and UNRWA. These estimates were then added to the estimates of other international migrants by age and sex in cases marked with the symbol (R). In other cases, they were used as a lower-bound constraint.

For the origin of international migrants by sex, estimates were derived from data reported by countries or areas of destination. Because the list of countries or areas of origin of international migrants reported by countries of destination is not always exhaustive, estimates of the origin of international migrants by sex are likely to underestimate the size of transnational populations, especially for smaller countries or areas of origin. In addition to completeness, estimates of origin of international migrants are also affected by the availability of empirical data. For countries or areas of destination with no data sources, estimates of origin-destination corridors were either imputed based on a regional or country model or were left blank. Cases where the data were imputed are identified by the symbol (I). For cases where empirical data were available for only one point in time, growth rates of the total international migrant stock by sex in the country or area of destination were used. Regional or subregional growth rates of relevant origindestination corridors of international migrants by sex were also considered. For countries or areas with data for two or more points in time, growth rates were computed for each available origin-destination corridor of international migrants by sex. Interpolation or extrapolation was used to estimate the international migrant stock for the seven reference years. Where necessary, estimates were adjusted based on other relevant information, including the overall size and growth rate of the total migrant stock by sex in the country of destination and the growth rates of migrant stock by origin in the relevant region or subregion of destination. The latter adjustments were done to ensure that the recorded change in the stock by origin was consistent with the change in the total migrant stock. For cases identified by the symbol (R), persons forcibly displaced across international borders were excluded from the computation of growth rates of specific origin-destination corridors. In such cases, estimates of the number of refugees,

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³ Rogers, Andrei and Luis J. Castro (1981). *Model Migration Schedules*. Research Report 81-30. Laxenburg, Austria: International Institute for Applied Systems Analysis. See also United Nations (1992). *Preparing migration data for subnational population projections* (United Nations publication, Sales No. E.92.XIII.6).

asylum seekers and Venezuelans displaced abroad for specific origin-destination corridors, as reported by UNHCR or UNRWA, were added to the estimates of other migrants by sex for relevant origin-destination corridors.

7. Adjustment to the 2020 stock estimates to account for the impact of the COVID-19 pandemic

For all countries and areas, the estimates of the international migrant stock for 2020 were adjusted to account for the impact of the COVID-19 pandemic. The adjustment acknowledges the border closures and severe restrictions and disruptions to international travel, especially in the initial months of the pandemic. In the absence of systematic empirical data on the effects of the pandemic on international migration, the mid-year 2020 stock estimates were derived under the assumption that there was no increase or decrease in the number of international migrants between 1 March and 1 July, 2020, namely during the last four months of the estimation period. The estimated impact of the pandemic on the 2020 stock estimate was computed as the difference between the counterfactual estimate of migrant stock made following the standard methodology described above (as if there had been no pandemic) and the value calculated assuming no change in the number of international migrants between 1 March and 1 July 2020.

The estimate of the effects of the pandemic on international migration will be revised in future revisions of the international migrant stock, as more information becomes available.